

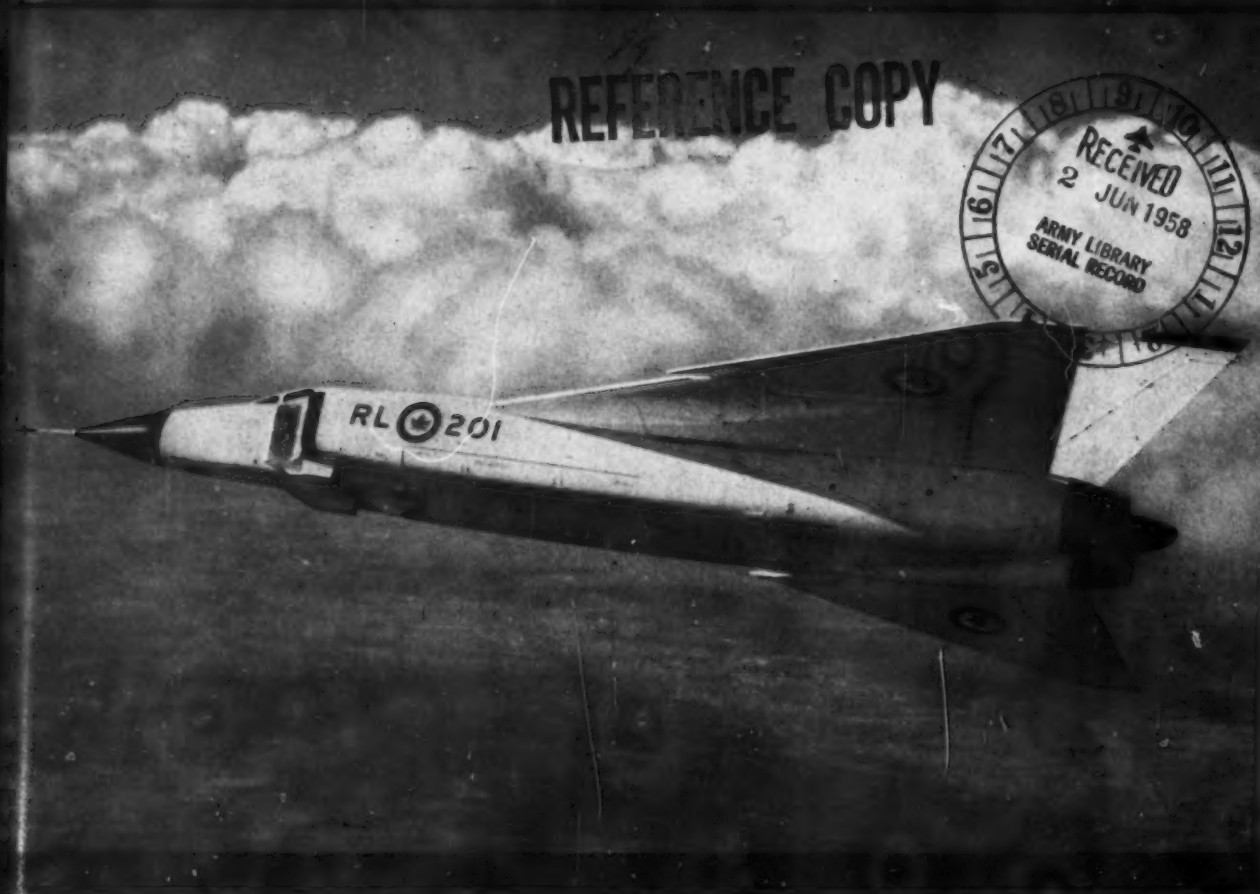
Is the Army making the impossible?

Air news in pictures.

CAB fare probe goes on ... and on ...

# AMERICAN AVIATION

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The Avro Arrow is shown in flight during test manoeuvres over Ontario

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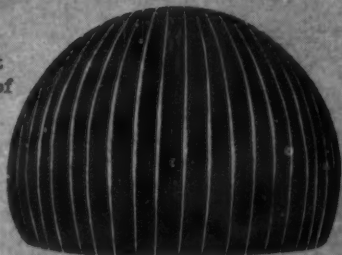
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**EDITORIAL OFFICES:** 1001 Vermont Ave., N.W., Washington 5, D.C., U.S.A. Phone: Sterling 3-5400. Cable: AMERAV. Advertising Offices: 17 East 48th Street, New York 17, N. Y., U.S.A. Phone: Plaza 3-1100.

**BUSINESS OFFICE:** . . . Lawrence L. Brettner, Circulation Director; Frank R. Williams, Circulation Fulfillment Manager; Ellen P. Coakley, Advertising Service Manager.

**REGIONAL OFFICES:** . . . New York City: 17 East 48th St., New York 17, N. Y., Robert Weston and Frederick W. Pratt, regional advertising managers. Phone: Plaza 3-1100. **West Coast:** 8943 Wilshire Boulevard, Beverly Hills, Calif., Fred S. Hunter, manager; John Ball, Jr., regional advertising manager. Phone: Bradshaw 2-6561, and Crestview 6-6605. **Canada:** Allin Associates, 12 Richmond Street East, Toronto 1, Ontario. Phone: Empire 4-2001, Allin Associates, 1487 Mountain Street, Suite 4, Montreal, Quebec. **Chicago:** 139 N. Clark St., Chicago 2, Ill. Richard K. Helwig, regional advertising manager. Phone: Central 6-5804. **Detroit:** 201 Stephenson Bldg., Detroit 2, Mich. Phone: Trinity 5-2555. Kenneth J. Wells, regional advertising manager. **Cleveland:** 244 Hanna Bldg., 1422 Euclid Avenue, Cleveland 15, Ohio. Phone: Prospect 1-2420, James C. Brettman, regional advertising manager. **Geneva:** American Aviation Publications, 10 Rue Grenus, Geneva, Switzerland. Anthony Vandyk, European Director. **London:** The AAP Company, 17 Drayton Road, Boreham Wood Hertfordshire, England. Phone: ELSTree 2688. Cable Address: STEVAIR. **London, Paris:** Jean-Marie Riche, 11 Rue Condorcet, Paris (9e). Phone: TRU 15-39. Cable Address: NEWSAIR PARIS.

**PUBLISHING INFORMATION:** . . . Published: Every other Monday by American Aviation Publications, Inc., Washington, D. C. Printed at The Telegraph Press, Harrisburg, Pa. Entered as Second Class Matter in Washington and Harrisburg. Subscription Rates: For U.S. and Canada—\$5.00 for 1 year; \$8.00 for 2 years. Other countries—\$7.00 for 1 year; \$12.00 for 2 years. Subscription limited to aviation industry personnel. Incorporates: Airports and Air Carriers; Aviation Equipment; The American Pilot; Aviation Sales & Services; U.S. Aviation; and American Airports. All rights to these names are reserved. Change of Address: Send old address (exactly as it appears on mailing label on your copy of magazine) and new address, including zone number if any to American Aviation, 1001 Vermont Avenue, N.W., Washington 5, D. C. Allow two weeks for changeover.



# AMERICAN AVIATION

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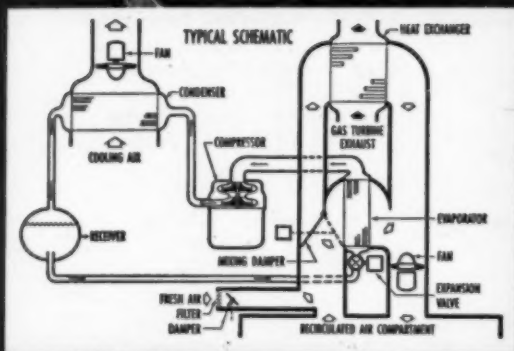
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**Coming next issue . . .** a special analysis of where the military money goes in aircraft development . . . what the average B-52, F-104, etc. costs . . . how much is spent for engines, electronics . . . by Defense Editor Elizabeth Oswald; the Fairchild F-27 story, a technical report by George Hart; plus a field report on Frontier Airlines by Eric Bramley.

# LIGHTWEIGHT air conditioning for missile support systems



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Evaporator tonnage	7.5
Ambient temperature	100F
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Condensing temperature	131F
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Evaporating temperature	48F
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## And So It Came To Pass—Again

THE MID-AIR COLLISION of an Air National Guard T-33 jet trainer with a Capital Airlines' Viscount over Brunswick, Md., on May 20 was a national disgrace, any way you look at it.

It was the inevitable result of criminal negligence on the part of the Departments of Commerce and Defense who were warned long ago that the air traffic control problem was becoming acute—and neither did anything about it. Put the discredit where it chiefly belongs, the U.S. Air Force is the agency most on the spot.

Naturally there is an outcry by Congress, the press and the public. And the nation witnessed on May 23 the first order ever given to USAF to place some curbs on its use of the airspace. USAF has lost an untold amount of public goodwill, but it has earned every bit of it.

What was a 34-year-old pilot doing on a joyride with a friend in a T-33 jet? By its own reckoning, a 34-year-old is of no military use as a jet pilot.

"I'm the luckiest guy in the world," the ANG pilot said at the hospital after the accident, but the news reports don't indicate any comments or questions about his concern for the passengers and crew of the commercial airliner.

"You can't keep flying forever without being in one or two crackups," he said, gesticulating with his bandaged hands, as reported in *The Washington Post* and *Times-Herald*.

So here is a bird who assumes crackups are the order of the day, he is over the age limit for any useful military jet flying, and he's out burning up the skies in a hot T-33 jet and doesn't remember what happened.

This is only a small sample of the lack of discipline which has been rampant from one end of the country to the other. Who's to blame? Buck passing, of course, but USAF has followed one slogan with consistency for some years: "We want it this way and this is the way it has to be."

Sure, and it continues that way. Two days after the Viscount crash, a staff member of this publication, who is a jet pilot himself, witnessed a T-33 buzzing a community on the outskirts of Washington right in the approach corridor to Washington National Airport. Our staff man, without identifying himself, called Washington ATC to report the acrobatics and suggest that approaching traffic be alerted. To his amazement he was calmly assured that this was no problem similar to the Brunswick accident . . . That conditions were VFR and that "everyone buzzes about pretty well as they want to—even some of the airline aircraft."

Well, we think the military-commercial collisions, and there will be more before things get better, have suddenly enlightened the public to the fact that much military traffic has been without traffic con-

trol. Somehow or other the facts of traffic control have never sunk in so deeply before. The public is finally awakened.

And in the end this is a good thing. Because the air belongs to everybody and the public that pays to use the air for common carriage is going to demand adequate regulation. This means that everybody should get fair use of the airspace. Up to now the military has had its own way, badgering everybody else, refusing to cooperate, refusing to compromise, and sloughing off the major problem, with the exception of MATS which follows airline procedures meticulously.

Three men in Government have been making slow but steady progress in bringing the Military into line. One is Elwood Quesada, special assistant to the President, who is working not only toward a Federal Aviation Agency to control air traffic, but whose Airways Modernizations Board is tackling the bigger problems of long-range control.

But CAB Chairman James Durfee deserves a sound pat on the back for standing up to the military and insisting on bringing all airspace under CAA control some months ago. The principle he established was an important milestone.

And CAA Administrator James T. Pyle can take some low bows, too. Pyle has continued the work begun by his predecessor, the late Charles Lowen, in giving air traffic control a prominence in CAA which it never had before. Pyle is now trying to cram into a few years a traffic control system which got off the ground years late, due partly to USAF balking and partly to pressures by special interests fighting against any control anywhere at anytime.

But what of the men of supposed stature who really have had the responsibility and never did anything about the problem? We can name Secretary of Commerce Sinclair Weeks, for one, and especially his former Undersecretary of Commerce Robert B. Murray, Jr. whose successful blockade of necessary funds led us to the situation today wherein CAA has neither the men nor facilities to meet the demands of civil and military flying. We can point to the present and the former Secretary of the Air Force, and the former and present Chief of Staff.

These are the men who set the patterns for others to follow. And the patterns they have followed have been to ignore the one over-riding basic fact about the U.S. airspace: That the nation is dependent upon air transportation and that the public is the primary factor at stake and that the public has a right—and will get that right—to have traffic regulation in its interest. It is quite tragic, and quite a reflection on cabinet officers and top military commanders alike, that the public has been sold down the river for so long. They were warned. But integrity and guts are two rare articles these days.

Wayne W. Parrish



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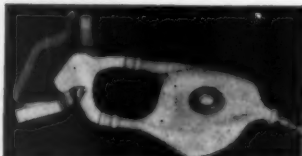
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## SPOTLIGHT

A new research project which has run into "technical" difficulties aims at improving the short field capability of the Lockheed C-130 Hercules. Basically it is a new system of boundary layer which will give the plane greater lift. The concept amounts to artificially blowing or sucking air over the wing and "it is essentially fooling the airfoil into thinking it is flying."

Attempt to meet Army requirements for a troop carrier assault vertical takeoff and landing aircraft is typified by the X-18 tilt-wing, vertical takeoff and landing research aircraft. About \$5.5 million is invested in the project, which aims at the feasibility of a 30,000-pound airplane for theatre logistics and assault transport roles. Such a plane would use four interconnecting turboprop engines. Load and range are classified.

Now that plans are firm to boost the availability of B-52s to 12 wings, heat is on to provide the aircraft with an appropriate air-to-ground missile, Hound Dog. Growing feeling is that more money is needed to make conventional weapons usable in the air for the foreseeable future.

USAF would like more money for Convair's B-58 Hustler. It is concerned by the "old age" of the B-47, for which the B-58 eventually will be substituted, and the slowness with which funds are being provided for production units of the supersonic bomber.

Meyers Aircraft Co., Tecumseh, Mich., is about to drive a wedge in the lucrative small business plane market with the introduction of its recently certificated 4-place MAC 200. Powerplant of the low-wing retractable tricycle gear airplane is a 240-hp Continental O-470-M driving either a Hartzell or McCauley constant-speed propeller. Specifications are: wingspan—30' 6"; length 23' 8½"; height—8'. Weights: empty—1,870 lbs.; gross 3,000 lbs. Performance: cruise speed—192 mph; landing speed with flaps down—55 mph. Price FAF Tecumseh is \$21,500 for the standard version.

Capital Airlines will soon take delivery of a turboprop Vickers Viscount as a replacement for the one that crashed near Tri-City Airport, Midland, Mich. last April.

Development of Rolls-Royce Tyne twin-spool turboprop engines slated for Vickers Vanguard has increased takeoff rating from 4,020 shp originally reported to 4,500 shp for first production engines. Tyne R.Ty.11 engines scheduled for 1961 delivery will be rated at 5,030 shp. Specific fuel consumption at 25,000 ft., 370 kts. cruise has been improved from original .415 lbs./TEHP/hr. to .405 for initial production and .388 for the 1961 engines. Tyne has completed 150-hr. development testing at 4,850 shp for takeoff.

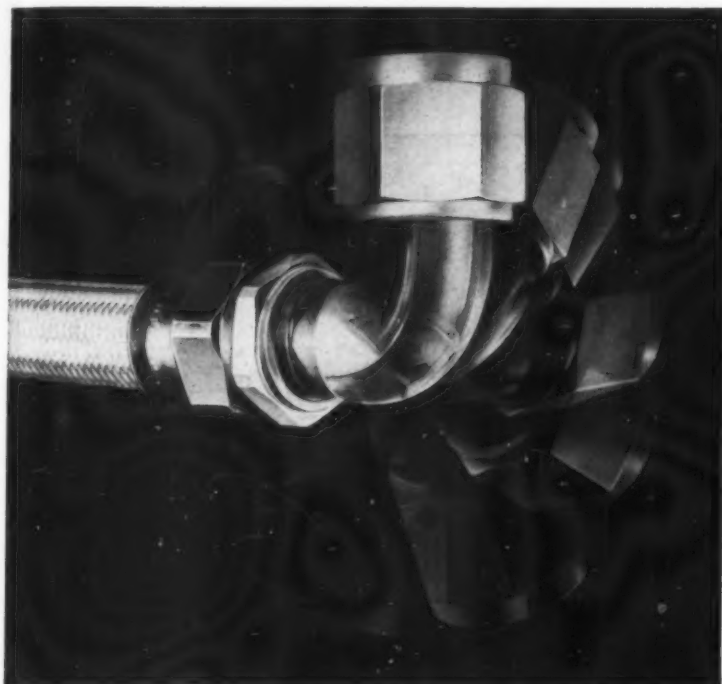
Fluorescent runway strip lighting system developed by Sylvania Electric Products, Inc., in cooperation with CAA (see p. 23) costs \$280 for every nine feet of runway (both sides). Installation similar to the first operational system at Washington National Airport would cost about \$50,000 (1,400 ft.). Life of fluorescent tube is 5,000 hrs. DuPont helped develop Mylar reflector surfaces and Massachusetts Institute of Technology contributed theoretical studies on the shape of the reflector.

More than 1,000 Sikorsky S-55-type helicopters have been built since 1952 and have accumulated well over a million flight hours in commercial and military use.



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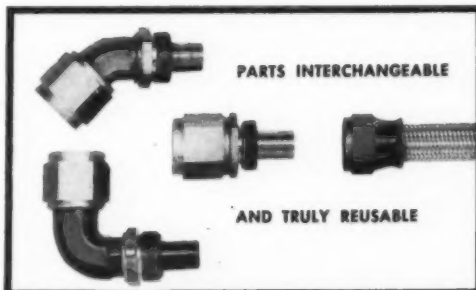
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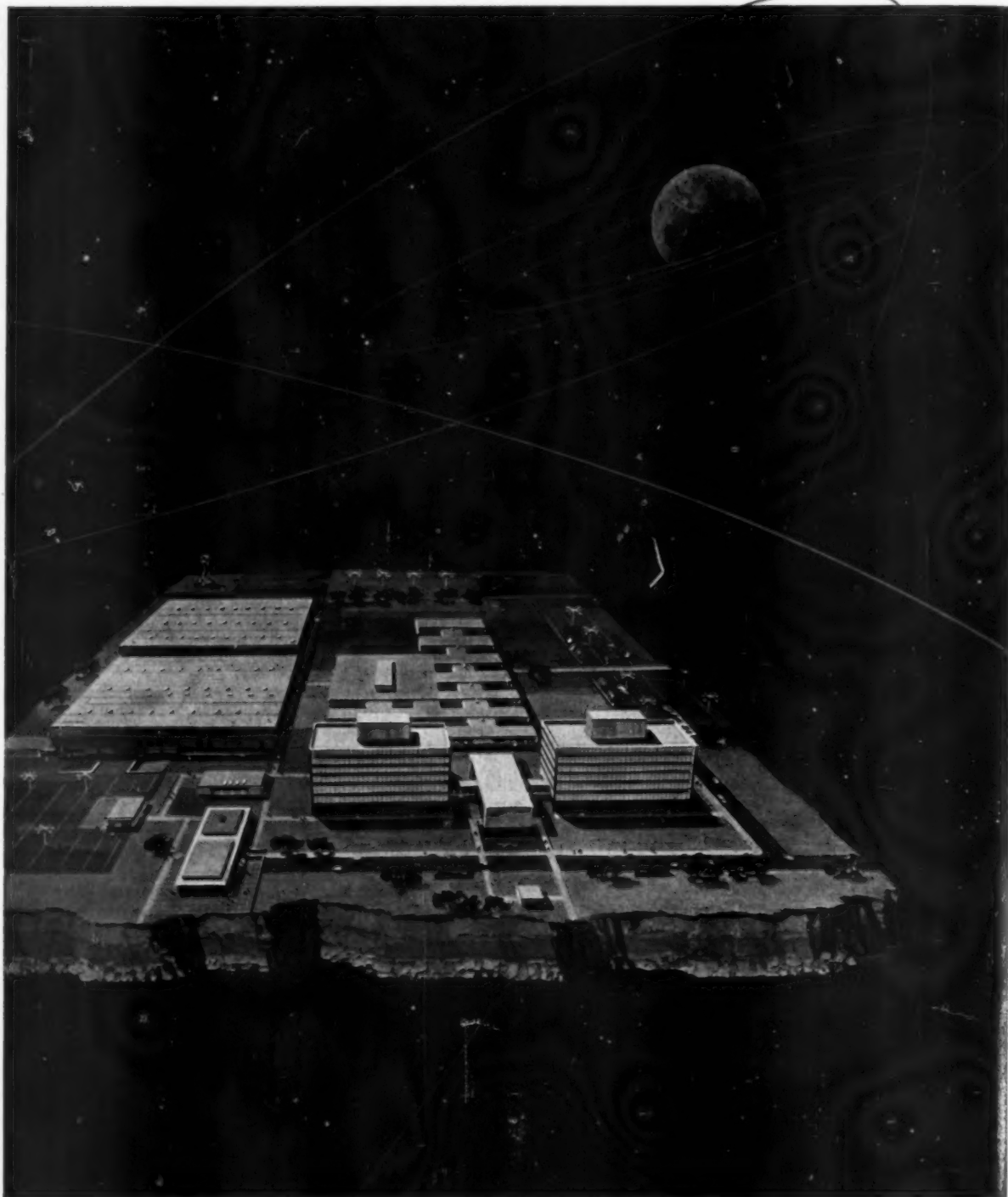
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## **AIRTRENDS**

**Major reprogramming and cutbacks for both USAF and Navy's Bureau of Aeronautics** are in the cards. In the case of the Navy, the trouble is a shortage of money. With USAF, where Air Defense Command is expected to take the brunt of the cutback, it's a matter of the money being used for higher priority programs.

**Growing dependence on aircraft for missile support could force a new look** at the status of Military Air Transport Service's inventory of transports. Latest aircraft in inventory, but not yet operational in any real sense, is the C-133. But indications are that the plane won't be able to carry the ground support equipment required for many missile installations. And MATS says the airlines have nothing capable of doing the job.

**USAF and Navy are concentrating on reducing accidents.** Both feel that military will probably be blamed for trouble even though CAA Administrator James Pyle and E. R. Quesada, special assistant to the President for aviation, point out that mid-air collisions can be anybody's fault under present conditions. There's also resentment that military isn't given public credit or funds for adequate development of such programs as two-way data link and the Navy's pathway in the sky, or for the long-range radar essential for traffic control.

**Aircraft Industries Association won't change its name at this time,** despite earlier reports to the contrary. This was decided at the annual meeting of the Board of Governors and Aircraft Manufacturers Council at Williamsburg. Change could come later if someone comes up with a name that reflects adequately the growing interest of the industry in missiles and spacecraft.

**Decision in the 250-horsepower engine competition for the Army has been made.** But there'll be no announcement until negotiations are completed with the winner. Allison Division of General Motors reportedly is in first position, although no one is ready to confirm the reports.

**Weapons system contracting techniques have been rapped in Congress.** Some industry factions have warned House Military Appropriations Subcommittee chairman George Mahon (D-Tex.) to "watch this weapons system operation." Complaint is that large defense contractors are giving subcontracts to favorites. Mahon agrees that it's bad to parcel out business to "satellite" firms. House Small Business Committee will get into the act with a two-day investigation in Los Angeles on June 26-27. The group wants to know whether competition with prime contractors operating government-owned facilities is hurting small business. It also wants to know whether prime contractors are pulling back work, normally subcontracted, into their own plants as quantity production continues to fall off.

**Chances are improved that the military will buy more jet transports**—at least a few DC-8s and Convair 880s. Now that the ice has been broken with President Eisenhower's decision to buy three Boeing 707s for special air missions, timing of next order is uncertain.

**New allowable cost provisions of the Armed Forces Procurement Regulations are still a long time away,** despite dissatisfaction of Congress with procurement practices. Debate with industry hasn't been settled. National Security Industrial Association has provided a complete set of rules as its membership would like them to be written for all purposes, including renegotiation, contract termination, price redetermination and cost-type contracts. These will all be reviewed before new rules are drafted. In general, industry would prefer to deal with the rules it knows rather than new ones.

**For late transport news and trends, see pages 47-50.**

## INDUSTRY At Deadline

### Collisions Fuel Fires for FAA

- Monroney-Harris Bills would put under one agency the powers of CAA, AMB and part of CAB
- A long-shot a month ago, this legislation is getting the "crash" treatment from Senate and House
- But the Congressional logjam created by other "must" appropriations will be a big hurdle

The much-debated idea of a single Federal Aviation Agency, encompassing the work and authority of numerous far-flung bureaus, boards and committees, moved closer to reality this week than it has ever been.

On Capitol Hill pro-FAA forces maneuvered adroitly to push legislation through this session—a real long-shot just a month ago.

What changed odds fast were two successive fatal collisions of military jets with commercial airliners and the recognition that present air traffic facilities and rules are totally inadequate in today's jet age (see page 48).

Heavily-endorsed bills by the influential Aviation Subcommittee chairman, Mike Monroney (D-Okla.), and House Commerce Committee head, Oren Harris (D-Ark.), are assured serious and prompt consideration. Time and a legislative logjam, however, are two major hurdles. Congress is generally running behind on some major "must" appropriation bills.

These other two precedent-making

and sure-to-be-long-debated Administration plans also hold a priority edge:

1. A comprehensive reorganization of the Pentagon on which the Senate has yet to make its first move.

2. Establishment of a new independent civilian-directed space agency.

Nevertheless, impatient lawmakers want action now to end air collision hazards. Unless the fired-up enthusiasm wanes in the next two months, a single agency administrator will be laying down air traffic rules by autumn.

The Monroney-Harris bills, subject to amendment, of course, would pull under a single experienced administrator CAA, the Airways Modernization Board and the nonrate-making and accident-probe power of the CAB. In this sense the proposals parallel Administration plans for a single agency.

The measures would also:

- Hand the Administrator full power to regulate the use of all U.S. air space.
- Open the way for appointment by the Defense Secretary of a special military air advisor.

• Authorize the CAB to ask the President to name public members to special boards of inquiry to investigate major air accidents.

What about the White House single-agency plans? CAA officials Airways Modernization Board, and members of the ATA conferred with Senate bill writers, apparently foreseeing no major conflicts.

Monroney, himself, told AMERICAN AVIATION, he is willing to barter points so far as language is involved.

On Capitol Hill some Republicans have been quick to swing behind the Monroney proposal. But elsewhere there were rumblings of discontent. Both Commerce Secretary Sinclair Weeks and Transportation Undersecretary Louis Rothschild could be expected to object, according to Monroney. One Senate source close to aviation matters quipped: "the Administration has been run down between second and third base."

In proposing a single agency, Sen. Monroney observed: "For the second time in less than a month the nation has been shocked by a collision between a military jet aircraft and a commercial liner. I am reliably informed that at the very time the crash was occurring, only a few miles to the north of Washington two near misses occurred within the vicinity of Washington Airport . . ."

"It is inevitable that we shall be reading of such crashes in greater numbers unless something is done, and done quickly, to give one agency of Government the right to control all the air space, to put all air traffic under a single control system, and to provide that airways that are traveled by hundreds and thousands of persons each month shall not be subject to the ever-increasing hazards of unregulated military training flights . . ."

### On the Need for a Federal Aviation Agency

**Sen. A. S. Mike Monroney (D-Okla.):** "It is just as illogical to have the military exert almost complete freedom in the half of the airspace it uses, while the civilian airspace is rigidly controlled by CAA flight procedure, as it would be to have one department of Government controlling red lights and another controlling green lights of the same traffic system."

**Rep. Oren Harris (D-Ark.):** "I am confident that new procedures and rules of the air can be worked out to reduce . . . hazards. What we need to do is create an agency to control our airspace and give that agency the personnel and the tools to get the job done."

**Sen. Thomas Kuchel (R-Calif.):** "The administrative agencies charged with the responsibilities in this field endeavored, by tightening up regulations, to eliminate, so far as law or regulation can eliminate, a recurrence of this type of disaster . . . Apparently, however, that action

has not gone far enough. "There is no rhyme or reason in the control, as between aircraft which are under the jurisdiction of the Department of Defense and all of the rest . . . The bill introduced . . . provides for a completely integrated, independent agency which would have the responsibility and which would have control."

**Sen. Ralph Yarborough (D-Tex.):** "The proposed legislation is needed, not merely because of the recent disasters and tragedies, but even more because of the thousands of near misses which are taking place in the country every year."

**Sen. Clifford P. Case (R-N.J.):** "We must establish an overall plan to control the use of air space. The president acted quickly to set up an emergency program of air safety regulation. Congress should move with equal urgency to authorize a permanent control system for both military and civilian flights."



How will the military, long-apprehensive about its right to unimpeded training and security flying, react? As the Aviation Subcommittee paved the way for hearings this week there were hints of possible surprise, military endorsement.

Tip-off came in an unpublicized meeting of Sen. Stuart Symington (D-Mo.) with Air Force officials. As veteran Senate observers viewed it, Symington's prompt endorsement of the bill reflected his satisfaction that the military right-to-fly will not be sabotaged by a single agency.

Other legislative authorities, however, expressed doubt that the Air Force would buy the present bill. Unmistakable language would give the agency administrator power to rule the

military out of contested areas. This is bound to spark objection. But FAA backers are optimistic a compromise can be reached. If not, the military in the end may have to swallow civil air space rule, anyway.

Besides Symington, more than 30 Senators signed their names to the Monroney bill (S. 3880). This list includes Republicans such as Leverett Saltonstall (Mass.), a ranking member of the Senate Armed Services Committee; Frederick Payne (Me.), member of the Commerce Committee; Thomas Kuchel (Calif.), and John Bricker (Ohio), ranking minority member of the Commerce Committee.

The CAB is expected to seek some clarification before it readily relinquishes any safety rule-making author-

ity. But one section of the bill may, in fact, answer CAB objections. It is a clause establishing an appeal from the Administrator's rulings. The Board, in short, could suspend unfair rules or regulations imposing economic hardships, the way the bill is written.

In the House Commerce Committee, meanwhile, chairman Oren Harris has asked for reports from aviation officials. As of last week no House hearings had been set, but Harris was reported to favor early action.

If the first flush of enthusiasm for the federal agency is any index, testimony this week before the Senate Aviation Subcommittee should cheer its supporters. Opponents will have their say, but they'll find themselves fighting a very popular trend.



Sikorsky develops a pair of new helicopters . . .

## A Navy All-Weather Job and . . . a Turbine-Powered Transport

Development of the lightweight turboshaft engines—General Electric's T58 and Lycoming's T53—has spurred Sikorsky Aircraft to come up with a number of new proposals of both commercial and military helicopters.

First of these to fly is the S-62 (pictured at right above), an 8-12-passenger copter powered by a single T58. It also will be offered with the T53. Sikorsky gave a public demonstration of the new turbine-powered copter less than a week after its first flight.

Soon to make its appearance will be a twin-turbine version of the S-58, which probably will be developed into the 20-25-passenger S-61. On the boards is a 40-passenger version of the S-56, powered by four engines. Company also envisions a 50-passenger copter with larger turboshafts.

In addition to the new designs, Sikorsky is offering retrofits on S-55 types now, probably will do the same with the S-58. Retrofitting the S-55 to the S-62 design will cost between \$100,000 and \$120,000, plus engine, a company spokesman said.

The aircraft would be practically

new with a two-foot longer fuselage and greater carrying capacity (Sikorsky figures the retrofit will increase payload of the S-55 by 700 to 900 lbs.). However, most of the more costly components, such as transmission system, rotor head, blades, controls etc., would be retained.

Fitted with a three-blade rotor, the amphibious version of the S-62 has a top speed of 117 mph, cruises at 98 mph. Maximum rate of climb at sea level is 1,160 fpm; hovering ceiling, 8,000 ft.; service ceiling, 15,700 ft.; fuel consumption at cruise is 63 gal./hr.; range with 182 gals. fuel plus 10% reserve is 230 miles. Gross weight is 7,500 lbs., useful load 2,950 lbs.

Company has set a preliminary price-tag of \$175,000, plus engine, on the S-62 and is offering deliveries next year. Sikorsky figures the T53 and T58 engines will cost about \$50,000 by 1960.

• And an all-weather copter too—Navy and Sikorsky Aircraft are claiming a "major breakthrough" toward all-weather helicopter operation with the introduction of the HSS-IN (pictured

at left above) which is capable of flying day and night under instrument conditions. It is Navy's latest version of the S-58.

New copter is equipped with Sikorsky-developed automatic stabilization equipment, with these refinements and additions: new radars to measure ground speed and altitude accurately; improved flight instrument and cockpit arrangement; addition of automatic engine rpm controls, and introduction of an automatic hover coupler.

The coupler, which uses radar to determine ground motion, gives the copter capability of automatically going from 200 ft. at 80 knots to zero ground speed hover at 50 ft. over a pre-selected spot.

Navy says the HSS-IN represents the combined efforts of many instrumentation subcontractors, including: Hamilton Standard, on engine governor; Lear, Inc., and Donner Scientific, Concord, Calif., on automatic control components; Ryan Aeronautical and Sanders Associates, Nashua, N.H., on Doppler radar; Raytheon and Sylvania on radio altimetry, and Sperry Gyroscope on navigation components.

## Profit Confusion

### Defense investigators urge firm profit policy

House defense investigators have urged military buyers to establish a specific profit range when dealing with aircraft manufacturers whose chief customer is the government.

In the preparation of a report by the staff of the House Military Appropriations Subcommittee, Pentagon procurement techniques were examined with a critical eye. And a major problem troubling investigators is the lack of uniform guidelines for handling negotiated contracts.

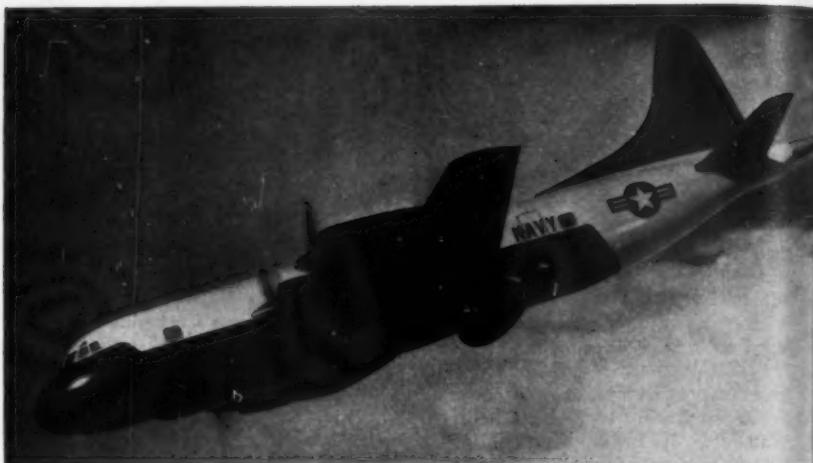
To lessen the chance of too-high or too-low profits on a negotiated contract, staff investigators recommended a firmer formula for contracting officers.

Conceding that such a policy defied easy determination, the report observed: "When a company does predominantly private commercial work, its average profit on such work provides a realistic ceiling to be adjusted appropriately through consideration of such factors as degree of risk and the extent of government assistance in the form of facilities or finances.

But, "When the company's business is predominantly government, this standard is not available and the profit allowance in any given case ordinarily depends on the ability of the government negotiators to withstand the company's demands. These demands are most often for not less than the best arrangement it has previously been able to negotiate with any branch of the government, and oftentimes they are higher."

In a point-by-point rebuttal of the House report, Pentagon procurement chiefs stressed that they were vigorously analyzing cost principles. After more industry sessions new policies will be added to procurement rules."

Meanwhile, however, clamping spe-



## Lockheed to Produce Sub-Seeking Electra

Antisubmarine version of Lockheed's turboprop Electra accommodates radar in bulge under fuselage. Tail extension houses "MAD" (magnetic airborne detection) unit which locates submerged

metallic objects by noting deviations in normal magnetic fields. Navy has awarded Lockheed a \$2-million pre-production research and development contract for the 450-mph aircraft.

cific-profit limitations on procurement officers, the Pentagon reply argued, would merely complicate matters. What the Pentagon wants to retain are "general terms" to define profit rate.

There are too many variations between each contract—widely differing risks and highs and lows of efficiency—said the military. The Renegotiation Act—working well as far as the Supply and Logistics office is concerned—is the safeguard, procurement chiefs countered.

One other familiar ogre to Congress was found less frightening this year. Noting improvement in the ratio of advertised bidding to negotiated procurement, the staff report urged continuing efforts to reduce still more the 84.4% of dollars awarded on a non-advertised basis in 1957.

But another procurement clause nettled investigators—the one allowing buyers to close deals without "further

negotiation." According to the report, procurement officers are using it indiscriminately.

"It permits the contracting officer to determine secretly the low responsive proposal and, if he so desires, negotiate secretly with that bidder or those bidders or to make the award without any negotiation whatsoever," charged the report.

To the military, however, it is a defense to thwart firms who file padded proposals, planning later to ferret out competitor's bids and to trim their own estimate only enough to grab the award.

But, the Pentagon claims, it outfoxed greedy firms by merely making it official that the first bid might be the only chance the contractor gets. "Hence, if their first proposals were not their best proposals, they risked losing the award solely because they included padding."

## McDonnell F4H-1 Starts Flight Tests



First flight of McDonnell Aircraft Corp.'s F4H-1 two-seat, all-weather interceptor took place last week at Lambert-St. Louis Municipal Airport. Said to have the greatest range of any Navy jet fighter, the Mach 2-plus F4H is powered by two General Electric J79 afterburning turbojets. Featuring a 45° swept wing with a span of 38 ft. 5 in. and a "horizontal" tail that slopes down at 23°, the plane is 56 ft. long. The new aircraft can be refueled in flight by the "probe and drogue" method and uses the "buddy tank" system which allows one F4H to refuel another at supersonic speeds, company says.



NOW FLYING! THE NEW  
MULTI-MISSION  
**LOCKHEED  
JETSTAR**

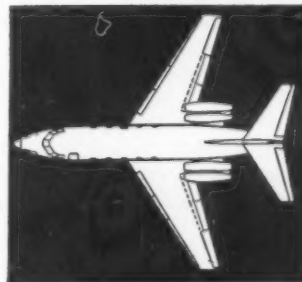
—an “economy size” jet of sweptwing design,  
that can match the performance of large  
jet transports...but at a fraction of their costs.

The JETSTAR was built with Lockheed funds to fill specific military needs. In tests it has flown faster than 500 knots, and cruised at altitudes of 45,000 feet. The first prototype is now undergoing Air Force evaluation testing at Edwards Air Force Base.

A 10-passenger plane in its standard configuration, the JETSTAR has built-in flexibility of interior design which gives it the capability of performing many important Jet Age military missions:

1. Navigator-Bombardier trainer
2. Electronics countermeasures trainer
3. Airways and air communications systems inspection
4. High-priority cargo carrier
5. High-priority personnel transport

The only aircraft of its kind flying today, the JETSTAR has the rugged stamina and easy maintainability designed into all Lockheed planes. These qualities assure long life and maximum utilization—more important today than ever before in our history.

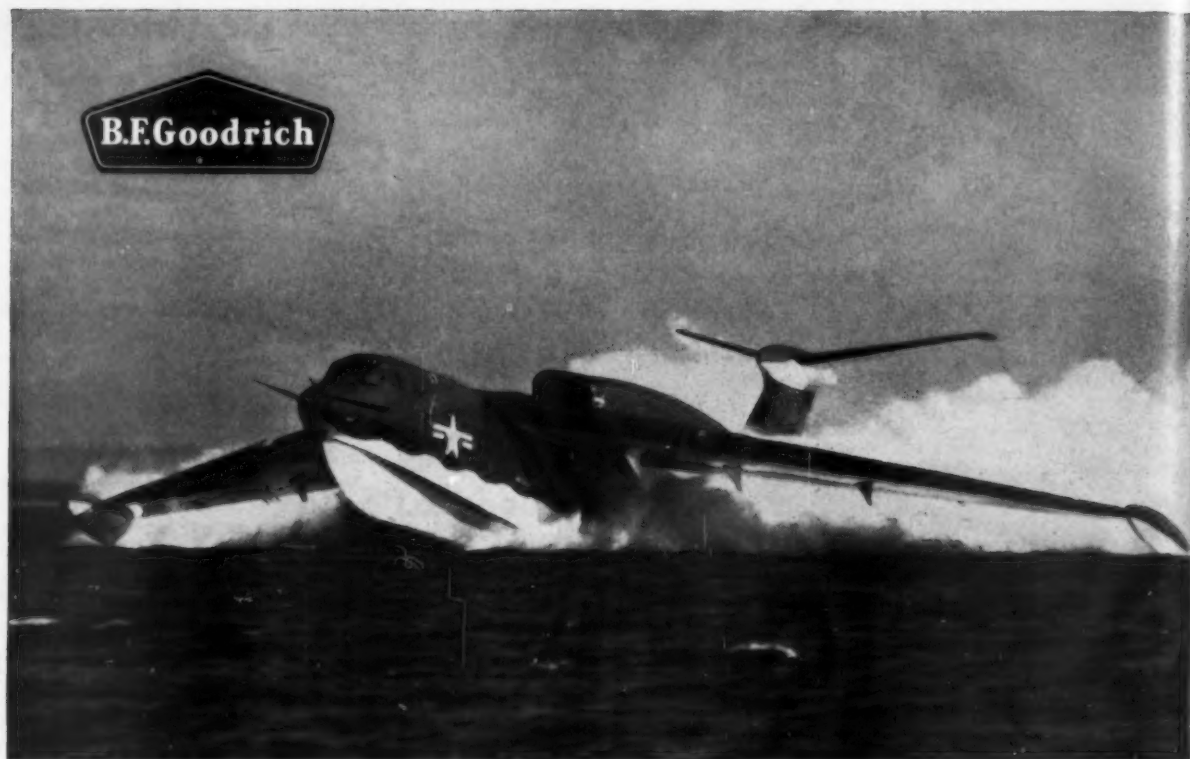


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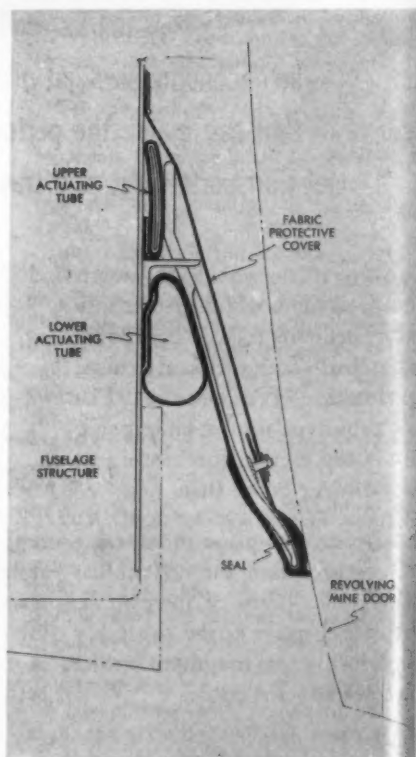
## **B. F. Goodrich Mine Door Seal helps Martin SeaMaster keep its powder dry**

Every time the Martin P6M SeaMaster takes off or lands, almost the entire bottom is submerged. And since a large portion of the bottom is formed by a radically new rotating mine door, some way had to be found to keep water out of the mine bay.

To close the gap of several inches between the door and the hull, B. F. Goodrich helped develop, and is now building, a special pneumatic sealing system. The drawing shows how the rubber seal fastens to the hull and to the bottom of a series of metal fingers. When the lower actuating tube is inflated as illustrated, it levers the fingers to press the seal against the door. When the upper tube is inflated, it levers the fingers again to retract the seal.

This unique device always provides positive closure because it compensates for deflections of either the hull or the door. And the special B. F. Goodrich rubber compound used for the seal withstands damage from ozone, jet fuel, hydraulic oil, salt water, extreme temperatures and high water pressure.

This development is typical of the way B. F. Goodrich engineers work with manufacturers to come up with the right answers for their specific problems. Why don't you outline your engineering problem in a letter to B. F. Goodrich Aviation Products, a division of The B. F. Goodrich Company, Akron, Ohio.



# **B.F. Goodrich** aviation products



## AMERICAN AVIATION

WORLD'S LARGEST AVIATION PUBLISHERS

## Is the Army Asking the Impossible?

by ElizaLeth Oswald

## The Army wants . . .

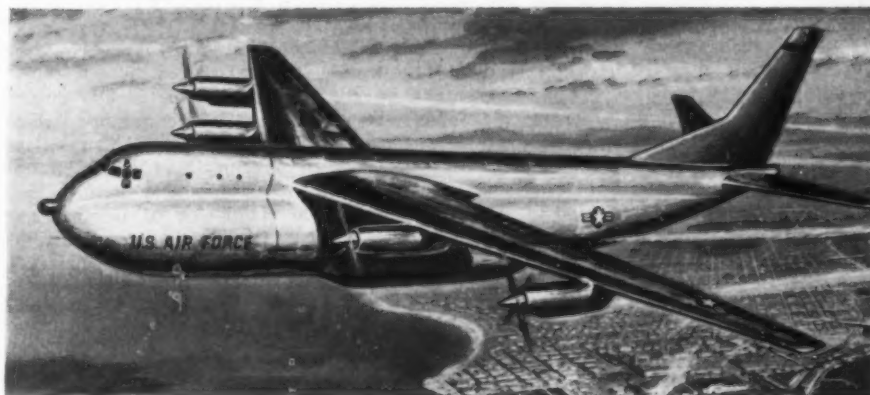
. . . strategic mobility. Translated by the *Army's Information Digest* for June 1958 this means the ability "to airlift a decisive limited war force to any place in the world in a matter of four or five days."

To accomplish this, the Army says it would need "ideally" an aircraft capable of carrying 600 or 700 troops at speeds of 500 to 600 miles per hour—an aircraft, says the *Digest*, "capable of carrying heavy combatant equipment, nonstop for distances of 3,000 to 4,000 miles and at the same time not requiring elaborate landing facilities."

As an alternate, the Army suggests the development of a very large water-based aircraft "for lakes and streams are much more plentiful than airfields, are not vulnerable to enemy attack, and require less preparation and maintenance."

"It is true that problems of loading, unloading and maintenance loom as formidable obstacles; nevertheless, water-based aircraft might very well be the answer to strategic mobility for the Army." And looking still further ahead, the Army sees the nuclear-propelled aircraft as an answer to the need for extended range and increased mobility.

A step forward would have been the purchase, according to the Army, of



the Douglas C-132, (pictured above) canceled as an economy measure. The C-132 would have had only limited use as a personnel carrier, according to the Air Force "because the main cargo compartment would not have been pressurized."

The plane would have carried about 50 tons for 3,500-mile normal range or about 85 tons for 3,000 miles, on an overload basis. The aircraft was powered with four Pratt & Whitney turboprop engines of 15,000 equivalent shaft horsepower each and Hamilton Standard 4-blade, 20-foot diameter propellers.

• **It could be built but**—There are presently no seaplanes either building or in inventory which could make a start toward meeting the Army's need, according to recently released Capitol Hill testimony.

abandonment of most of the high priority programs now considered as major deterrents of a big war.

Even if the money could be found to support the need, the Navy believes that the supply of troops and equipment—by air, even in the limited quantities needed to handle the first stages of a small war, would be impossible from a logistic standpoint. Some of the problems are: (1) the supply of fuel, to permit such a plane to permit a return flight; (2) the equipment to handle supplies on and off the aircraft; and, (3) above everything else, the large number of planes required.

Rear Admiral F. N. Kivette, assistant chief of naval operations (air), told a House Committee recently "we have no transport seaplane in our plans." He added that recent troubles with the R3Y, built by Convair as a post-war development, are "an example of the continuing troubles we have had with that transport seaplane since its first inception."

There were other but similar troubles, Adm. Kivette said, with both the Mars and Tradewinds, earlier transport seaplanes now retired from the fleet. Basically, in all cases, he said, there were powerplant troubles which have not yet been solved.

Rep. Daniel Flood (D-Pa) said recently that what the Army wants in the way of a seaplane is one that would carry advance echelons and support hardware for 30 days. It should also be capable of carrying light tanks, medium operational technical missiles

## What does the Navy say?

Can it be met? Vice-Admiral W. V. Davis, Jr., who has just finished a tour as deputy chief of naval operations (air) in answer to a question by the writer said: "It is now aerodynamically possible to build an airplane to almost any size. The trouble is that it wouldn't be economically feasible."

To meet the Army requirement, under current economic conditions would force, in Adm. Davis's opinion,

←  
Vice Admiral W. V. Davis, Jr.



and artillery as well as antitanks. This, he computes, would mean a seaplane capable of carrying a payload of 133 tons.

The Marine Corps isn't planning to use such aircraft, even if they become available. Maj. Gen. H. R. Paige, USMC, Assistant Chief of Staff for Logistics, said:

"I believe the sea-based transport has certain limited possibilities and certain limited use. It would be good

for use in landing specific reconnaissance parties to certain areas and recovering them. It would be useful for the transport of emergency supplies and various other types of logistic support in that field. I believe that its cost is such that, for widespread use, it is almost prohibitive at this point."

Gen. Paige added that such planes as are already in existence will be used for limited operations only and not as a principle means of landing.

## ... And what about the Air Force?

This service is charged with the responsibility of moving anything or anybody anywhere in the world where it is required on orders of the Secretary of Defense.

Lieut. Gen. C. S. Irvine, deputy chief of air staff (materiel), who has flown almost every kind of airplane in the Air Force inventory, says that it is both aerodynamically and economically unfeasible at this time to build the airplane which the Army says it wants in numbers that would be needed to make troop movements of the type described practical.

He said the Air Force would have liked to order the C-132 into production, but the economic strains on the budget would not have made this possible without forcing the abandonment of more important projects. The first two planes would have cost, according to AF records, about \$100 million for development but the price would have dropped sharply if quantities had been ordered.

However, the aircraft which the Army has described as a "step forward," had a gross takeoff weight of 420,000 lbs., a mission range of about 3,500 miles, a mission payload of 100,000 lbs. and a speed of 410 knots. It required 5,280 ft. to take off and a landing strip of 3,250 ft.

Indications are that to meet the Army requirement of a minimum of 75 tons, takeoff weight would climb to about 580,000 lbs., with obvious increases needed in powerplants. And to meet the indicated speed requirement, there is more than a little question as

to whether turboprop engines could be used efficiently.

Building an aircraft of the dimensions required, in the numbers which the Army says are needed to meet the threat of piecemeal war, would impose almost an astronomical burden both from the standpoint of original cost and from the standpoint of maintenance and operation, AF officials say.

**\* Nuclear transport is possibility—** Answer might ultimately lie in a nuclear transport. However, Gen. Irvine says, there seemingly is too little to be gained and too much to do to warrant the expenditure for nuclear-powered transports at this time.

Conceding that the nuclear-powered transport would be somewhat simpler to develop than the nuclear-powered bomber, he questions the desirability of going forward with such a program unless it can be established that such a plane, as a weapon of war, can do the combat job of bombing or surveillance somewhat better than the aircraft now available.

Gen. Irvine indicates, moreover, that sometime before the Air Force gets to the nuclear-powered transport, there will ultimately be some jet transports purchased that will ease the airlift problem somewhat but will increase the requirement for long runways and elaborate landing facilities.

As a matter of fact, the Military Air Transport Service has been directed to buy three jet transports (Boeing-707) for use, at least at this time, by President Eisenhower. Ultimately, as he sees it, there will be others bought.

But for the foreseeable future, main dependence will have to be on the big C-124s, now being used to carry cargo, including missiles and missile-launching equipment, with a load-carrying capacity of 38,000 pounds, a speed of 190 knots and a range of 2,100 nautical miles, and the C-130, whose speed is 286 knots, the payload about 21,500 lbs. and the range 2100 nautical miles. In the case of the C-130, effort is to

reduce take-off and landing requirements by improving the boundary layer control.

Finally, MATS is acquiring 50 C-133s, the little sister of the C-132, now cancelled. Ultimately the aim is to provide about 100 of these planes which have a cruising speed of 275,000 knots, a gross takeoff weight of 275,000 lbs., a mission payload of 41,700 lb. (to be boosted somewhat) and a range of 3,500 nautical miles (somewhat more than the Army's minimum stated requirement).

Remainder of the airlift requirement can be met, according to Air Force figures, from other planes in the MATS inventory, even though it is generally conceded that the lift would not be adequate to meet requirements for more than a very short period.

## One Hurdle Cleared

### Airport aid bill passes Senate, goes to House

Congress is expected to complete action this session on extension of airport-aid legislation, which has been passed by the Senate. The bill (S. 3502) provides \$512 million for needed improvement, construction and repair of the nation's airports, and for a four-year extension of the Federal Airport Act.

Continuation of federal airport-aid, due to run out June 30, 1959, was opposed by the Administration on the grounds that local communities were financially capable of supporting the jet-age airport development costs. Administration spokesmen also expressed the view that the Federal government should concentrate its efforts on the development of the Federal Airways System.

The approved bill calls for an increase in available Federal-matching funds from \$63 million a year to \$100 million a year, plus an immediate \$75 million emergency fund to be used next fiscal year. Funds allocated to the Alaskan, Hawaiian, Puerto Rican and Virgin Island territories would be increased from \$3 million to \$5 million a year, prorated 45%, 25%, 20% and 10%, respectively.

Amendments to the original proposal were added to provide for periodic seal-coating, repair and resurfacing of landing strips chiefly due to weather damage. Amendment would apply to small airfields, otherwise ineligible for federal assistance and now banned on the grounds that it is a maintenance cost.

Prohibition against the use of Federal funds toward concession areas or facilities, as proposed in the original bill, has been rewritten, but remains much the same in its intent.



← Lieut. Gen. C. S. Irvine

## Johnson Named V. P. By Lockheed Aircraft

Vernon A. Johnson has been promoted to vice president by Lockheed Aircraft Corp. He will continue as director of Lockheed corporate offices in Washington, New York, Dayton and Sacramento.

Johnson joined Lockheed in 1942. He was assigned to the company's Washington office in 1947 and was named to manage that office in 1954. Johnson served as president of the Washington Aero Club in 1953.

## Coast Guard Orders Two C-130B Turboprops

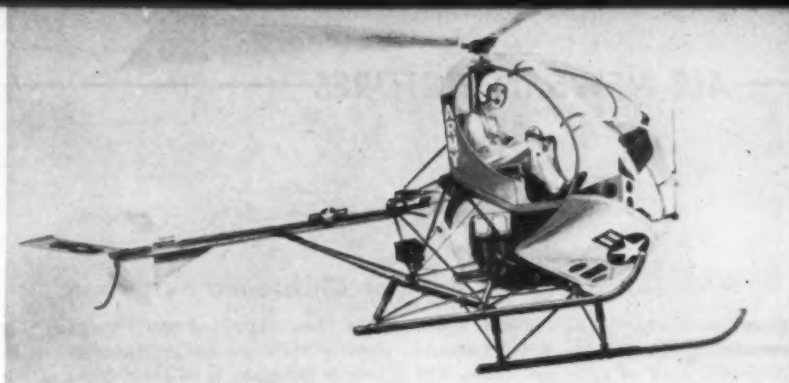
Two Lockheed C-130B Hercules turboprop transports have been ordered by the U.S. Coast Guard for delivery in November and December, 1959.

The Coast Guard will buy two more in 1960 and hopes eventually to have a total of 14.

## Capital Airlines Names Dever Vice President

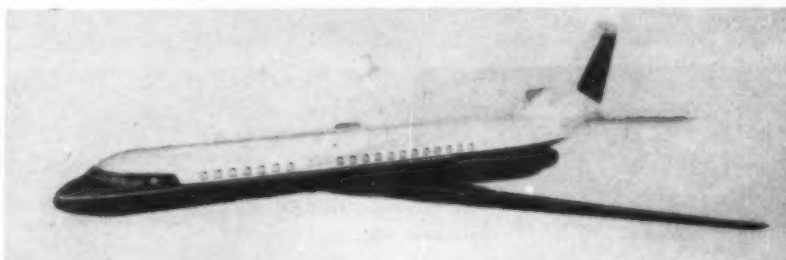
Hayes Dever has been elected vice president and secretary of Capital Airlines by Capital's board of directors. He has been with Capital for 24 years, holding positions in executive, sales public relations and operations departments in the airline.

Dever joined Capital as a ticket agent and has been secretary of the corporation, executive assistant to the president and director of public relations. Dever is chairman of the Air Transport Assn. Public Relations Committee, and a member of the board of governors of the American Public Relations Assn.



## Army Buys New Hughes Lightweight Copter

Army has ordered five Hughes Model 269A lightweight helicopters for evaluation. The two-place copter has been designed YHO-2 by Army. Empty weight is 890 lbs. It can carry a 660-lb. payload. Powerplant is a 180-hp Lycoming. YHO-2 has a top speed of 90 mph and cruise range of 150 miles. Aircraft division of Hughes Tool Co., Culver City, Calif., is manufacturer.



## King-Size JetStar In the Works?

Look again. Lockheed's L-193, model and partial mockup of which are shown here, had fuselage-mounted jet pods. Design originated in 1949, pre-dating by about five years Sud Aviation's Caravelle which, generally, is credited with originating the novel engine arrangement. Talk of the Model 193 fizzled out about 1954, presumably as a result of Lockheed's workload on other projects. Figures available at the time indicated the big jet was designed to carry 100-120 passengers 2,500-3,000 miles at 550-600 mph. Gross weight was estimated at 200,000 lbs.; length, 143 ft.; span, 138 ft.; height, 38 ft. Power was to have been four Pratt & Whitney J57s or four Wright J67s.

## Hokanson Tests Airliner Air-Conditioner



New mobile ground air-conditioning unit designed exclusively for airline use has undergone tests by its designer and builder, the C. G. Hokanson Co., Los Angeles.

Unit is said to be capable of producing a full 35 tons refrigeration with a maximum output of 3,500 cu. ft. per min. at up to 12 in. of static pressure (water gauge).

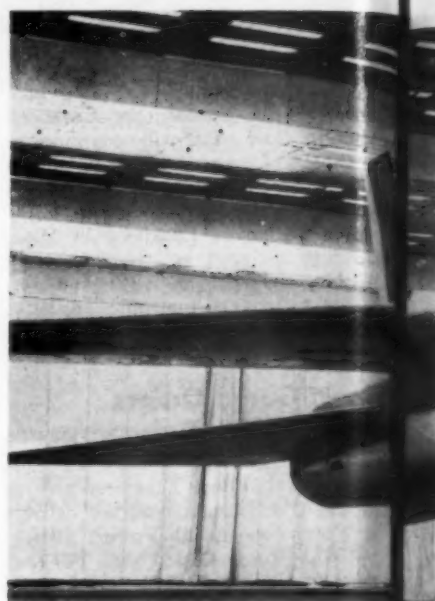
Airflow is adjustable from 1,000 to 3,500 cfm by means of the eight-cylinder compressor which modulates the capacity by cylinder unloaders as well as by varying the engine speeds driving the compressor.

The mobile conditioner is mounted on a standard A-120 International Harvester truck cab and chassis and stands slightly over six feet high with an over-all length of approximately 17 ft.



### **NAA'S A3J Fighter-Bomber Christened 'Vigilante'**

North American Aviation's A3J fighter-bomber was christened the "Vigilante" at ceremonies held May 16 at the Columbus plant of the company by Admiral Arleigh A. Burke, chief of naval operations. The future of the plane is in some doubt at this time because of the financial problems of the Bureau of Aeronautics. Air Force sources said that BUaer would like USAF to take on some of the costs of the development program but there is no requirement for a new fighter-bomber because the single-engine F-105 is already in production.



### **This is the Iroquois**

Orenda Iroquois turbojet rated at more than 20,000 lbs. thrust is shown in this photo of the actual engine to be released by the Canadian company. A thrust-to-weight ratio of better than 5-1 is claimed for this engine, which has been air-tested in a specially modified B-47 on loan from USAF. Curtiss Wright Corp. last year signed an agreement with Orenda Engines Ltd. covering the manufacture, sale and development rights of the Iroquois for a seven-year period.



### **Kaman Flies K-17 Cold Jet**

Kaman Aircraft Corp.'s new K-17 "cold jet" helicopter, recently flown for the first time, makes use of its tail rotor for steering only. Driven by a hydraulic motor, the fixed-pitch propeller reverses direction of rotation in response to movement of the rudder pedals. A 400-shp Blackburn Turmo 600 turboshaft engine drives a Boeing compressor. Air from the compressor is ducted through the main rotor blades to jet nozzles at the blade tips.

### **When Silence is Golden**

To waken or not to waken, that's the question stewardess Linda Herman must often answer for herself. But with United Air Lines' new "sleep or eat" tags, no indecision is necessary. Passenger picks his tag before he settles down for a long flight.







### \$2 GCA Saves USAF \$199,998

Do-it-yourself ground-controlled approach rig developed by two technicians at Patrick AFB is used to help pilots land aircraft under simulated blind flying conditions. A simple steel wire grid mounted on a jeep, it costs only \$2 compared with the \$200,000 pricetag on a complete GCA installation. Here's how it works: the horizontal and vertical wires mounted on the frame permit the operator to estimate the

position of the aircraft either above or below the glide slope as well as how far it is from touchdown on the runway. Using the simple principle of a grease-pencil dot on the jeep windshield and triangulation, the observer can "talk" the pilot in for a perfect landing. (Above, left) Staff Sgt. John Patterson adjusts wire rig used as a sight for landing aircraft. The device is used for practice operation, not routine missions.



### Flying Crane

Westland Aircraft Ltd., British helicopter manufacturer, is building a utility flying crane version of its 42-passenger Westminster helicopter. Said to be capable of carrying a 7½-ton payload within its open fuselage, aircraft is scheduled to make its first flight in about three months.



## **BRISTOL PROTEUS**

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overhauls in 13 months  
airline service



**Just over thirteen months of airline operation,** the overhaul life of the Bristol Proteus 705 jet-prop has been extended from 500 to 1,300 hours—convincing proof of this engine's mechanical excellence and exceptional reliability.

First axial engine on the world's international routes, the Proteus is also the first engine to feature the free-turbine system, pioneered by Bristol. This system gives flexibility in choice of power and propeller speed, produces remarkable efficiency over a wide range, and results in very low noise and vibration levels.

Proteus has the lowest specific fuel consumption of any turbine in service—military or civil.

**Proteus powers the Britannia.** The Bristol Proteus, the most powerful jet-prop in airline service, powers the giant Bristol Britannia—currently setting new standards of speed and vibration-free comfort on world-wide routes.

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**THOR**—a fully developed ramjet engine, designed for complete reliability in starting and flight.

**OLYMPUS**—remarkable for great power at high altitude and very low fuel consumption. Bristol and Curtiss-Wright have jointly developed a civil version of the Olympus—the Wright TJ 38 Zephyr.

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# CAA, Airlines Near Accord on Jet Problems

by George Shaw  
Airports Editor

Airlines and the Civil Aeronautics Administration seem to be moving closer to complete accord on what airport facilities are needed to support commercial jet operations.

CAA Administrator James T. Pyle revealed a completely revised technical standard order (-N6B) last month to a meeting of the Airport Operators Council. Pyle told AOC members that if they expect to get jet transport service they must be prepared to make the proper facilities available.

Of primary importance in the list of "proper facilities" are longer runways, paved taxiway shoulders and high-speed turn-offs. Pyle said that the runways, taxiways and aprons were going to have to be kept clean to avoid the possibility of jet engines ingesting foreign objects.

Speaking at the same meeting, representatives of four major airlines that have jet transports on order made known the specific requirements their companies expect the airport operators to meet. There was a surprising unanimity of opinion among the four airline spokesmen.

It is clear from a study of the order that CAA and the airlines have been exchanging views for some time as to what the runway-length minimums should be. Minimum length of the primary runway for "Trunk Line" airports, lowest classification of airport remaining in the order, has been increased from 4,200 ft. to 5,000 ft. The revision has also eliminated "Feeder" class airports from the order entirely. This means that any airport expecting to be served by air carriers must meet at least the Trunk Line minimums.

In addition to the Trunk Line increase the Express category has been increased to a 6,000-ft. minimum and Continental to 7,000 ft. Intercontinental airports were given a new minimum of 8,700 ft. and Intercontinental Express has been raised to 10,500.

**• Secondary runways needed**—These new minimums are pretty much in line with airlines' proposals as to runway requirements, with respect to primary runways. However, most of the carriers have expressed alarm at the lack of suitable secondary runways on airports that will get the bulk of jet traffic.

United Airlines v/p-engineering, W.

C. Mentzer, said his company feels that most airports it plans to serve have suitable primary runways or will have them in plenty of time. However, he said that because many of those same airports lack suitable secondary runways. Airlines will have to curtail passenger service at certain times of the year and bear increased operating costs.

There is general agreement on runway widths being standardized at 150 ft. Originally it was thought that a 200-ft. minimum was desirable. The new standard will result in a saving of 25% in new runway construction. Taxiways are expected to be 75 ft. wide, again with unanimous acceptance and in accord with CAA recommendation. Both CAA and airlines recommend a stabilized 25-foot shoulder on each side of the taxiway that will support the weight of runway sweepers, minimizing the ingestion of foreign matter by the engines.

**• Portland cement preferred**—Preference of airlines in runway paving materials is for Portland cement concrete because of its better visibility and resistance to wear and deterioration from jet fuel spillage. It is felt that this should especially apply to runway ends, ramps and taxiways. R. J. Sutherland, American Airlines' airport facilities engineer, said that bituminous pavement, if coated with a tar emulsion seal, should give satisfactory service.

Experience gained in the Andrews Field narrow-gauge flush-runway lighting experiment conducted last year by CAA has had the effect of selling that system to airlines. It is called one of the best answers in eliminating missed approaches in low visibility conditions.

Regarding jet fuel it appears that kerosene is more acceptable to airlines than the JP-4 fuel in wide use by the military. Kerosene is less likely to explode in the event of tank rupture, is more dense than JP-4 and therefore gives more BTU output per gallon. It is, of course, cheaper than JP-4 and at present is not subject to fuel taxes.

However, kerosene presents problems of filtration and separation because of its density, and would require more judicious handling in storage than either gasoline or JP-4. Special precautions have to be taken to avoid the possibility of contamination,

water entrainment and static charge build-up.

Kerosene's settlement rate is so slow that a minimum of four days' supply, based on the rate of pumping at a given station, must be maintained to insure that settlement is complete before the fuel is pumped into the aircraft tanks.

Fueling of aircraft has been more or less resolved, particularly at the larger terminal airports, to the fixed, underground hydrant system. Hydrant fueling is faster than tank truck loading. Since jets use about four times as much fuel as reciprocating engine aircraft, the time element is quite considerable.

Most plans seem to be based on fueling stations located in the hangar area, as well as in the terminal area. This will permit fueling of aircraft in maintenance areas prior to their return to the loading ramps.

United has already accepted bids submitted by several oil companies which call for the companies to furnish kerosene, storage facilities and delivery to the fueling hydrants or trucks, where it is not considered economically feasible to install hydrant fueling. United plans to use new trucks that have greater capacity than present equipment and a lower profile.

Problems of blast and noise encountered in maintenance and run-up will be handled by most airlines in the same manner—with blast fences and portable suppressors.

**• Other problems to be solved**—Other problem areas under study by the airlines, where standardization will play a major part in resolving the difficulties, are passenger and baggage handling.

There had been more or less mutual acceptance of the view that ticketing and loading procedures are outmoded. Jet age ticketing will be streamlined, with some of the present procedures being eliminated and automation introduced wherever possible. Automatic ticket-vending machines are under study. Electronic machines will dispense fare information and interline pro-rate values.

Aerobridge loading of passengers is already a reality and further developments of this principle are expected in the next few months. Self-propelled passenger loading steps will be used in place of, or in conjunction with, the aerobridges.



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**THE BLACK HOLE**—that's what pilots called the runway at Washington National Airport (above) before installation of CAA's new fluorescent strip-light system last month.



## There's a New 'Great White Way'—for Safety

The "ideal" runway lighting system dreamed of for years by airline pilots came a step closer to reality when the Civil Aeronautics Administration on May 21 put its new VHO (very high output) fluorescent strip-light system in operation at Washington National Airport.

Installed on the National instrument runway for in-service evaluation, the new system was developed jointly by CAA and Sylvania Electric Products, Inc. as one phase of a program to develop a national standard for runway lighting.

Not intended as a permanent lighting system for the Washington airport, the system is not even full-scale. An operational installation on an airport would be considerably longer than the 1,400 feet covered by the test facility, possibly 2,500 to 3,000 feet.

Pilots have long been bothered by the "black hole" that exists between the rows of incandescent lights used in present runway lighting. Relatively high landing speeds of jet transports soon to go into service will add to the already serious problems of (1) depth perception and (2) angle-of-approach guidance encountered in low-visibility conditions.

The new VHO system throws a blanket of brilliant fluorescent light over the runway surface, reflecting from a pattern of white markings painted on the runway for contrast. CAA engineers call this installation the "acid test" of the system as the runway at National is blacktop and 200

feet wide. It is expected to work even better on standard 150-foot-wide portland cement runways.

Floodlighting the flareout and touchdown area of the runway gives the pilot height sensitivity and directional and roll guidance comparable to daylight operations. Even runway texture is apparent with the fluorescent lighting, a valuable assist in establishing point of touchdown.

Consisting of 272 very high output fluorescent tubes, each of 13,250 lumens and eight feet in length, the continuous 1,400-foot row of lights begins 200 feet past the runway threshold.

The only break in the line is an intersecting exit taxiway.

The fluorescent tubes are enclosed in lightweight aluminum fixtures. Reflectors in the 30-inch-high fixtures direct the light across the runway in a flat band, eliminating glare and cutting through any haze that might be present close to the runway surface.

The fixtures are mounted on frangible couplings that fracture easily if struck by a plane, thus eliminating the possibility of damage to aircraft in the event of a runoff on the side of the runway. Ample clearance is allowed for normal operations, however, as the two rows of fixtures are installed 13 feet from the outside edges of the runway. In the event of fracture of a fixture the electric current is automatically shut off.

Culminating three years of research and development the new system is a continuation of extensive runway light-

ing tests conducted by CAA last year at Andrews AFB in nearby Maryland. The Andrews tests resulted in the now-standard EFAS (Electronic Flash Approach System). Several EFAS systems are being installed at major airports around the country. As yet there are no plans for additional purchases of VHO systems. CAA emphasizes that the present installation is a test facility.

EFAS provides early runway identification for incoming planes through a centerline of "strobeacon" (stroboscopic beacon) lights that flash in sequence in the direction of the runway's safe-landing area, starting 3,000 feet out from the threshold.

CAA has distributed about 2,500 questionnaires to airline, military and business pilots who use Washington National in an effort to get users to comment on the system.



**RUNWAY INTERSECTION** at right limited test installation to 1,400 feet.



## NAA Rolls Out Its UTX

by Fred S. Hunter  
West Coast Editor

North American Aviation's UTX jet utility trainer is now all set to go, except for engines. These are scheduled for delivery from General Electric on July 29 and NAA is scheduling the first test-flight for Aug. 30. NAA completed assembly of the aircraft early in May, including a finished cabin with four TECO, Inc. seats installed. These seats, however, are now being removed to make room for instrumentation for flight testing.

NAA has ordered four 50-hour J85s from GE, two for installation in the prototype aircraft and two for spares. These engines incorporate seven-stage compressors and develop approximately 2,250 pounds of thrust. Production 185s, ready in 1959, will incorporate eight compressor stages and develop approximately 2,450 pounds of thrust.

NAA also has made some design changes in the airplane, including a four-inch contraction of the fuselage for the purpose of reducing the drag to maintain range capabilities if specific fuel consumption of the engines doesn't come up to expectations.

Operational range of the smart-looking twin-jet utility aircraft, which NAA calls the Sabreliner, at 440 knots (506 mph), with crew of two, four passengers and baggage, is 1,200 nautical miles in a clean configuration, 1,500 nautical miles with two 120-gallon external tanks. In both cases, 30 minutes loiter at 20,000 feet and 5% reserve fuel are included.

Here is the way NAA describes the versatility of the UTX:

(1) As a combat readiness trainer, it enables flight crew personnel to test ground defenses with jet penetrations

and to solve navigational problems safely at a low cost and at air speeds, altitudes, and rates of descent characteristic of modern combat types. Line officers, who have little time to maintain their pilot rating, can be provided with a modern jet that enables them to keep abreast of late developments in operational techniques.

(2) As an administrative transport, the Sabreliner can carry top-echelon personnel quickly, conserving their available administrative time for productive use. Since base facility requirements are modest, the plane can operate from outlying airports, saving time

normally lost driving to and from major airports.

(3) Speedy, simple removal of seats and other passenger facilities converts the UTX into a cargo plane capable of carrying up to 25 cu. ft. of cargo weighing as much as 2,500 lbs. Seat tie-down fittings are suitable for use as cargo rings in lashing down the cargo.

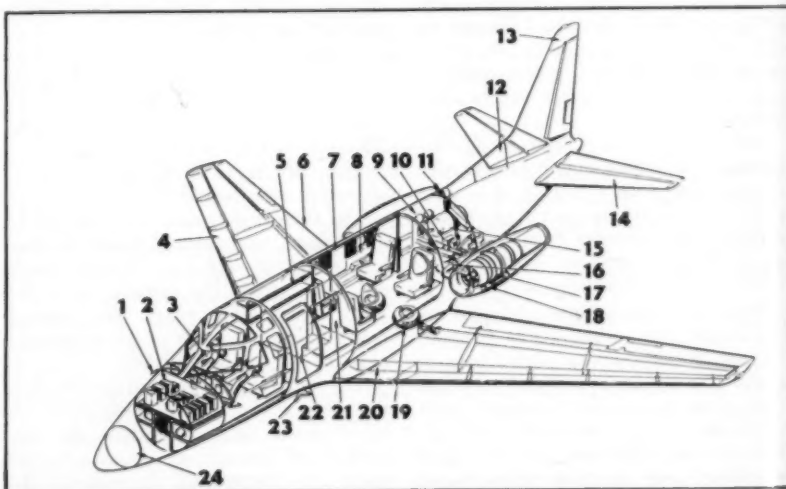
(4) The Sabreliner also can serve as a navigational trainer. With its basic configuration, it can accommodate student, instructor and such equipment as sextants and a driftmeter.

(5) The plane's high speed lends it readily for use as a tow for low-drag targets for aerial gunnery practice.

The UTX has been designed to be serviced and maintained easily with a minimum of equipment. All portions of the engine requiring service are accessible from ground level. Large doors open the lower part of the nacelle, permitting the engine to be lowered by means of a small hoist such as the Mark 8 bomb hoist. Batteries are mounted on sliding trays and are served from ground level.

Quick maintenance of the hydraulic system is made possible by two servicing points accessible from ground level. Single point refueling is being provided plus a gravity filler on each wingtip to be used in event pressure equipment is not available.

Built to comply with CAB regula-



**HERE'S WHAT MAKES A SABRE LINER:** 1. Airspeed Head (both sides); 2. Electronics Compartment; 3. Crew Compartment; 4. Slats (five per side); 5. Baggage Rack; 6. Flaps (both sides); 7. Emergency Exit; 8. Passenger Compartment; 9. Equipment Compartment; 10. Battery; 11. Ram Air Inlet; 12. ADF Sensen Antenna; 13. VHF Antenna;

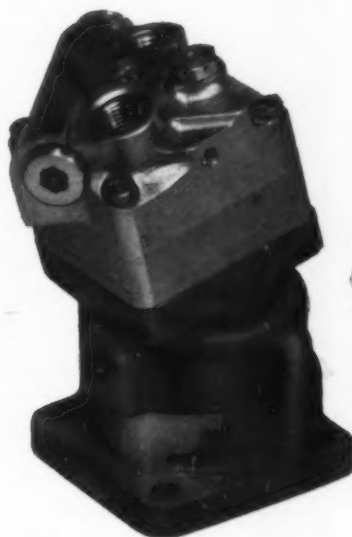
14. Trimmable Stabilizer; 15. Fuel Vent Tank; 16. Chemical Toilet; 17. J-85 Turbojet Engine (two); 18. Accessory Drive; 19. Main Landing Gear; 20. Integral Fuel Compartment (wing); 21. Coat Compartment; 22. Emergency Escape Hatch; 23. Speed Brake; 24. VOR Antenna.

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For further information write for Bulletin No. A-5233.

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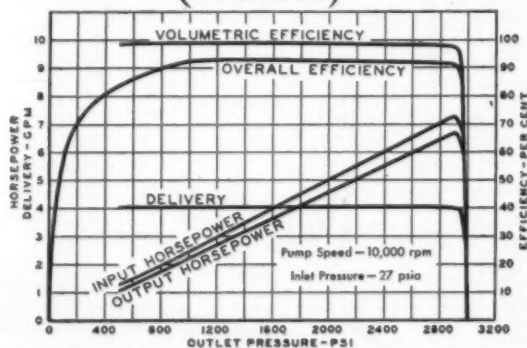
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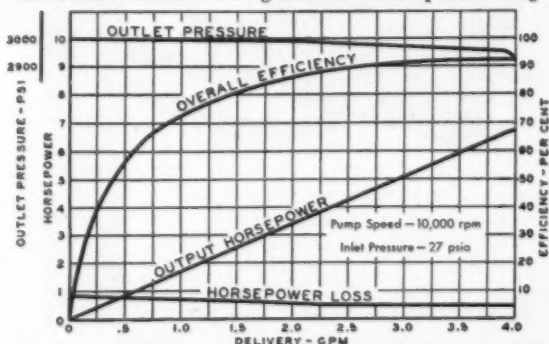
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Performance Characteristics of Model E-001111 Pump  
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Actual test data demonstrating high overall efficiencies even at partial flows for the new Vickers variable delivery pump. Note low horsepower loss throughout entire delivery range.





## THE MISSILE MEN

From the earliest Assyrian "artillery missile"—with the flint-tipped warhead and hawk feathers for a guidance system—the fate of nations has been in the hands of the missile men.

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Martin based its long-range planning on that probability in 1946 with the development of one of this nation's first successfully operational guided missiles. The result is the *total missile* concept.

Under this concept, far more is involved in missile system contracting than the design and production of hardware:

The testing, packaging, delivery, maintenance, launching, operation, field training and contractor service requirements make up the *total* story of missile performance...in the air, and operated by the military personnel.

The heavy demands of our country's greatly accelerated missile and space development programs now emphasize the importance of Martin's total capabilities as a major resource for the military and astroscientific branches of the government.

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This is one of the few systematically organized companies of genuine Missile Men in the country.

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## —MILITARY—

tions and featuring twin-engine reliability, the plane has an extra-wide windshield that follows the recommendations of the Society of Automotive Engineers in selecting angles of vision for the crew. Major portion of the engine compartment structure is of titanium, in case of fire in that area.

The plane also features a large, hydraulically operated speed brake on its underside, just behind the cockpit. Designed to slow the plane down quickly under any condition, it will not cause any trim changes when opened.

Automatic control of the cabin rate of climb provides safe, comfortable ascent or descent. This can be pilot-controlled if necessary. A cabin altitude of 8,000 ft. is maintained up to an airplane altitude of 45,000 ft.

The Sabreliner has two emergency exits, a door on the right side of the cabin and a bailout exit in the floor between the speed brake, which acts as a wind deflector. An emergency hydraulic accumulator is provided to extend the high-speed brake for in-flight escape through this hatch.

In the basic configuration, the passenger compartment contains four individual seats facing each other with space between each pair for a removable table. Similar to airliner chairs, the seats are adjustable and contain parachutes in back. Oxygen masks are stored in compartments overhead for use above 40,000 ft. A chemical toilet is located at the aft end of the cabin.

Removable partitions between the forward cabin bulkhead and the aft pressure bulkhead permit rearrangement of the interior to meet various requirements up to eight passengers.

The UTX with maximum load of 15,330 lbs., will take off over a 50-ft. obstacle at 3,950 ft. (with 2,400 ft. as ground roll) and land within a distance of 2,150 ft. (with 1,200 ft. as ground roll) over a 50-ft. obstacle. On a single engine, the Sabreliner at maximum load will take off within 5,100 ft. Average landing speed of the aircraft is 86 knots.

The Sabreliner has a span of 42.43 ft., length 43.75 ft., height 16.50 ft. Wing area is 334 sq. ft. Wings are swept back 28.5 degrees. The two GE J85 engines are attached to the aft section of the fuselage in the style that has come to be known as the "Caravelle configuration." Automatic slats are incorporated on the leading edge of the wing. Fuel capacity is 850 gals.

Although the Sabreliner design was fashioned to meet Air Force requirements, Navy is showing considerable interest in the aircraft and Army personnel also have inspected the mockup at NAA's Los Angeles plant.

## NEW PRODUCTS

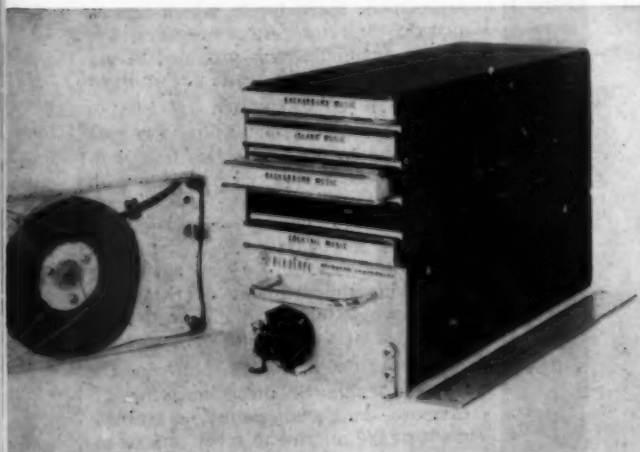


### Power Sweeper

A runway sweeper said to be capable of cleaning approximately 1,000,000 sq. ft. per hour with sweeping speeds up to 25 mph is offered by **Wayne Mfg. Co.** Company has been granted manufacturing rights by **Schorling Waggonbau Co., Hanover, Germany.**

The sweeper employs a low-pressure, high-volume suction principle in addition to a nylon agitator system, to insure removal of debris from cracks in surfaces. Soon to be exhibited at national airports, the sweeper also will be made available on a rental basis.

Circle No. 1 on Reader Service Card.



### Airborne Music

Aerotape, a music reproducer manufactured by **Packard-Bell Electronics Corp.**, is offered for use by airlines. Miniature unit provides for five 45-minute reels of music.

Circle No. 2 on Reader Service Card.



### Touch-Up Lacquer

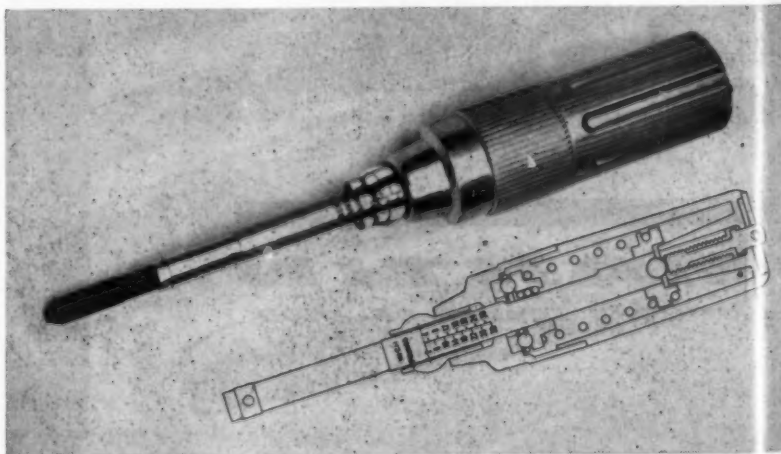
Spray-on touch-up lacquer for control panels is available from **Panellit, Inc.** The lacquer, packaged in a 16-oz. aerosol container, comes in ASA gray and #7 light green.

Circle No. 4 on Reader Service Card.

### Torque Screwdriver

Adjustable, torque-limiting, calibrated screwdriver is manufactured by **Richmont, Inc.** Plainly marked torque settings between two and 30 in. lbs. are changed with a disappearing key recessed in the handle. Tool may be sealed at required setting. A 3/4-in. hex bit-holder takes standard bits and sockets. Manufacturer says new ball bearing movement permits indefinite holding of close tolerance settings.

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tomorrow's giant jetliners. Esso Aviation Turbo Oils 15 and 35, developed a decade ago, are still the only synthetic lubricants approved for the engines of the world's most advanced turbine airliners.

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THE CONVAIR 340



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Based on the well-proven design of the Convair 440 but with the increased performance and economy offered by Eland turbo-prop engines, the Canadair 540 has an assured future among medium and short haul operators all the world over.

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### — NEW PRODUCTS —

#### Aircraft Vacuum Pump

Designated Model 033612, new oil-free aircraft vacuum pump is available from **Pesco Products** as a direct replacement for Pesco's Model 3P194. Requiring no lubrication and discharging oil-free air, the unit makes possible installed weight reductions up to 25% may be achieved. Rated capacity is 4.5 cu. ft./min. at 1,500 rpm with 4 in. Hg suction and 1 in. Hg pressure.

Circle No. 5 on Reader Service Card.

#### Water Purifier

Lightweight (3,600 lbs.), aluminum, gasoline-driven, vapor compression still is manufactured by **Badger Mfg. Co.** With 125 gph capacity, evaporator is designed to produce pure drinking water from sea water and brackish water and, company says, is applicable wherever high-purity water is a requirement.

Circle No. 6 on Reader Service Card.

#### Portable Degreaser

Vapor degreaser made by **Manpro Corp.** will clean parts up to 17 in. diam. by 16 in. deep. Designed to permit use of any standard metal barrel for on-the-job cleaning, the unit has 700 lbs./hr. capacity for steel parts.

Circle No. 8 on Reader Service Card.

#### Liquid Cooler

A liquid cooling unit which can accommodate a variety of fluids, including electronic cooling fluids, has been developed by **The Garrett Corp.'s AI-Research Mfg. Div.**

Designed for airborne or ground applications, unit weighs 11.5 lbs. and has a heat rejection capacity of 1.5 kw with 2 gpm flow, fluid inlet temp. of 150°F and air inlet temp. of 125°F under ambient sea-level pressure.

Powered by an integral motor operating on 400 cps, 416/208 volt, 3-phase hookup, it is adaptable to 200/115 volts.

Circle No. 9 on Reader Service Card.

#### Metal "Fabric"

A metal "fabric", manufactured by embossing color and texture on almost any metal, is produced by **Croname, Inc.** Named Croweave, the product simulates artistically woven cloth with threads of gold and silver. It can be perforated for sound, air or light transmission.

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## LITERATURE

• **Asphalt Sealer:** 4-page illustrated folder lists major causes of asphalt deterioration and explains how these can be stopped with Jennite J-16, surface seal for asphalt pavements. Maintenance, Inc.

Circle No. 76 on Reader Service Card.

• **Industrial Fire Equipment:** 22-page product catalog lists fire-fighting equipment and accessories now available to industry. The book provides a single source of purchasing for fire-protection equipment, extinguishers, hoses, safety equipment, etc. American LaFrance Corp.

Circle No. 77 on Reader Service Card.

• **Electric Motors:** 24-page catalog lists geared and non-geared electric motors from 1/2,000 to 25 hp and speeds from .65 to 10,000 rpm. Also listed are details of thyatron controllers, silicon and selenium rectifiers and mercury relays. B & B Electric Motor Co.

Circle No. 79 on Reader Service Card.

• **Printed Circuitry:** 6-page folder describes line of copper-clad Phenolite, charts performance and illustrates 11 grades of copper-clad materials for printed circuit applications. National Vulcanized Fibre Co.

Circle No. 80 on Reader Service Card.

• **Titanium Welding:** 32-page illustrated handbook outlines techniques for titanium welding. Details of fusion- and resistance-welding equipment and procedures are given along with information on welded joint designs, guaranteed mechanical properties of weldable grades of titanium, recommended settings for open-air machine welding, etc. Titanium Metals Corp. of America.

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• **Temperature & Pressure Measurement:** 20-page, pocket-size, illustrated glossary of terms used in temperature and pressure measurement should prove useful to scientists, engineers and designers in the aircraft, missile petroleum and process industries. Trans-Sonics, Inc.

Circle No. 82 on Reader Service Card.

• **Airport Map:** 20" x 30" map-directory gives location and detailed information on New York State's 275 landing facilities. Airports, operators, pilots and airlines planning flights across the State should find this a very useful reference aid. New York State Dept. of Commerce.

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← **BORATE MIXTURE** is used by contractor's PBV to establish fire-retarding line. Plane flies for U.S. Agriculture Dept.

## The Airborne Smoke-Eaters

by Richard van Osten

One market that has not received the attention it deserves is the business of aerial fire-fighting.

Most of this "business" is conducted by the Forest Service Branch of the Dept. of Agriculture. During the past 11 years this federal agency has spent approximately \$13 million on aerial operations—more than \$1 million a year.

Busiest region of operations has been the West Coast (Region 5), where as much as \$30,000-\$40,000 a day has been spent in air charter to transport skilled fire-fighting teams. During the peak fire season, a period lasting about 10-15 days, as many as 1,440 persons have been carried in a single day.

Region 5 has spent a total of 75,000 hours in aerial fire-fighting, including both contract and charter operations. That's a lot of hours by any standard.

Obtaining commercial DC-6s and DC-7s is expensive, but the speed with which trained fire-fighters are put on a fire line can result in a better than 20% net savings (not including the national resources saved) over any other type of transportation.

Charter costs seem even more insignificant when chalked up against a recent Southern California fire with a damage total of \$33 million.

The West Coast region also outflies the balance of the service by two to one.

**• Not new, but growing**—Aerial fire-fighting is not new. But it wasn't until 1955 that the program was "sold" for the first time. The budget was doubled, and is expected to increase again.

The hard core of service activities still centers around the ubiquitous Stearman. Each year the service enters

into a rather informal agreement with agricultural operators interested in fire-fighting jobs, records where they can be located and what equipment is available.

It's not too difficult to line up a large group. Many of the spray or dusting operators are interested in the \$75 per hour rate, particularly in agricultural off-season.

Forest Service requirements on contractor's equipment are stringent. The narrow hopper used in dusting is not considered adequate and the service is asking for Stearmans with dump valves capable of dropping 130-135 gallons of "Firebrake," a sodium calcium borate mixture, in 3-4 seconds.

For the coming season, rotating beacons will be a requirement on all aircraft, as will a turn-and-bank indicator, an instrument long since tossed out of some agricultural aircraft.

**• Stearmans are economical**—Although it leans toward larger aircraft whenever possible, the service points out that it is a lot cheaper to have Stearmans standing by rather than tie up the larger aircraft.

Region 5 has had much success with the TBM (Grumman TBFs built by General Motors) because of its large internal tank area, and now have seven of their own. Government-owned TBMs operate for about \$115 per hour, carrying between 440 and 540 gallons of the fire retardant.

Chartered TBMs cost about \$300 per hour, including the pilot's salary, which is not included in the service's own TBM cost. Several converted PBVs are also available to Region 5 at about \$350 per hour. These carry 1,700 gallons of water or 1,100 gallons of borate mixture.

The borate mixture itself poses some

problems. It is hard to obtain in the peak fire season as it appears to be a single-source product. When mixed it is abrasive and must be removed from shock struts, etc., after each two or three loads.

The mixture is supposed to weigh 10.7 pounds per gallon when properly mixed, but in the rush of a fire battle it usually comes closer to 11 pounds per gallon.

Helicopters are the secondary workhorses of fire-fighting. Most of these are chartered from commercial operators for liaison, spotting, cargo hauling, mapping, general transport and laying fire hose. Because Region 5 has only two helicopter pilots (Army-trained) it has spent as much as \$12,000 with a single operator during one fire, and a total of \$100,000 for all helicopter operations in another. Going rate for Bell 47Gs is between \$90 and \$100 per hour.

**• Likes rotary-wing aircraft**—The Forest Service is enthusiastic about the rotary-wing aircraft and believes it has been the "key tool of the past 20 to 25 years." But the potential of these machines could be improved considerably if the altitude performance could be improved, because most fire operations take place at over the 5,000-foot level.

The service's equipment development center in Arcadia, Calif., has accomplished a great deal of research on the use of helicopters in its "Helitack" program. Based on a special rack, which has been granted a CAA supplemental type certificate so it may be left on the operator's aircraft, the Arcadia center has produced:

(1) a 35-gallon "Helitank" that dumps in two seconds, (2) a tray carrying 1,000 feet of lightweight hose that may be "unreeled" at low air speeds and (3) a lightweight (187 pounds) "helipumper" consisting of a gasoline engine, 200 feet of hose and a water hopper.

A construction program for "spot" heliports in the forests of Southern California is also under way.

Region 5 has an annual aviation budget of about \$161,000, appropriated mainly for the training of flight crews and maintenance of its Lodestar, DC-3, Twin Beech, Bonanza, Cessna 180 and TBMs. Eight regular pilots are employed at nominal salaries.



BACK IN '39 this Eastern Air Lines KD-1B made news by rising from the roof of Philadelphia's post office. The same design is now back in the news as if to prove that . . .



## Old 'Giros Neyer Die—Or Even Fade Away

by George Hart

Technical Editor

Advances in any industry almost invariably signal development of new equipment. One registers a double-take, then, when one finds Kellett Aircraft Corp. taking quite the opposite tack in coming up with a "new" aircraft primarily aimed at agricultural aviation.

Kellett has dipped deep into the dusty blueprints and, once again, is building the KD-1 autogiro.

The KD-1 series, certified by CAA in the "Standard" category, originally made its appearance early in 1935. The military version (YG-1) saw service with the Army Air Corps. The KD-1B, a single-seater with enclosed cockpit, was used by Eastern Air Lines in 1939 and 1940 to fly mail off the roof of Philadelphia's post office to Camden airport across the river.

World War II brought a flood of subcontracting work to Kellett's door and, in addition, the company stepped up development in the helicopter field. The KD-1 autogiro gradually fell by the wayside.

Now, almost two decades later, a two-place, open-cockpit KD-1A is taking shape in Kellett's plant at Willow Grove, Pa. It will be powered by a 125-hp Jacobs L4-MA-7 engine turning a fixed-pitch propeller. This, the same basic engine as used in 1935, was chosen because of the healthy availability of spare engines and parts.

The KD-1A has an empty weight of about 1,500 lbs. and a useful load of 700 lbs. Fully loaded, completely autorotational takeoff run is 200 ft. under zero wind conditions. Takeoff

distance can be reduced considerably by "clutching in" or starting the rotor using partial engine power. The clutch is disengaged and the throttle opened all the way to effect a "jump" takeoff.

Rate of climb of the KD-1A is given at 1,060 ft./min. and service ceiling as 14,000 ft. Minimum flight speed is only 22 mph and cruise speed is 100 mph. An accomplished pilot can land the 125-mph (maximum speed) autogiro with no forward ground roll.

Rotor span of the KD-1 series is 40 ft. However, for storage, towing or taxiing in confined areas, the rotor blades may be folded back over the tail. The aircraft then occupies a space only 10 ft. 10 in. high, 10 ft. 3 in. wide and 26 ft. long.

In flight, the pilot controls the autogiro in just the same manner as he would a conventional airplane. The rudder is used for assistance in turns, and normal movement of the stick in the cockpit produces normal airplane-type reactions by tilting the rotor. Climb and descent are accomplished by a combination of rotor tilting and power application.

A qualified pilot with a light airplane background can check out in the dual-control KD-1A with about three hours' instruction, Kellett says. The pilot is not required to hold a helicopter rating.

The company feels the autogiro, with its near-helicopter performance, has a place in aviation now more than ever before. Aiming the aircraft not only at the crop-dusting-and-spraying market, but at any operation requiring very low speed stability but not hovering, and STOL but not VTOL capability, Kellett suggests such ap-

plications as pipe line, power line and forestry patrol work. In addition, the company feels that military uses for this type of aircraft exist today as they did more than 20 years ago.

The autogiro, having fewer and less complicated parts and assemblies, is cheaper to manufacture and, therefore, retails for less than the helicopter. Kellett expects to sell the KD-1 for about \$10,000.

Maintenance may be accomplished by trained airplane mechanics using only the erection and maintenance manual for transition to autogiro systems. No special training is required.

The autogiro's lack of complexity results in less down-time for maintenance. Spare parts inventory is considerably less than that required to support a helicopter.

The autogiro's rotor system is more rugged than that of the helicopter and, since it is not driven in flight, is not subjected to engine vibration. There are no delicate tail-rotor adjustments to make and maintain.

Use of a standard airplane powerplant, requiring no special cooling and mounted in a conventional, accessible manner, cuts maintenance time.

The engine may be started by swinging the propeller by hand in the event of battery failure. Air starts may be made as easily as with an airplane.

Since the autogiro is flown in the same manner as a conventional airplane, the pilot is not kept as busy as he is when flying a helicopter. He does not have to devote both hands to exercising control but has one hand free to operate other equipment in the cockpit.

The KD-1A going together now is expected to roll out about August 1.



### Air Force Attachés Win Safety Award

Maj. Gen. Millard Lewis (right), Air Force Chief of Staff, Intelligence, accepted on April 15 a flying safety plaque from Air Force Chief of Staff

## —PEOPLE—

Gen. Thomas D. White (left) on behalf of the Air Force Air Attaché System. The attachés flew 75,000 accident-free hours in a period just short of six years.

The attachés fly C-47 and C-45 transports in areas where normal flight aids are often non-existent or inadequate. Normal safety awards in the Air Force cover a six-month period. The attaché planes are under control of the Assistant Chief of Staff, Intelligence.

### Pirie New Deputy Chief Of Naval Operations

Vice Adm. Robert B. Pirie has assumed his new duties as Navy's Deputy Chief of Naval Operations (Air), succeeding Vice Adm. William V. Davis, Jr., who becomes deputy commanding officer of the Atlantic Fleet.



Pirie, who served as head of the aviation department of the Naval Academy from 1946 to 1948 and later commanded a carrier division, was commander of the striking fleet, Allied Command, Atlantic, prior to his new assignment.

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### Hobbs New Asst.-V. P. At American Airlines

G. Ward Hobbs has been named asst. vice president, operations services with American Airlines. He has been with American for 25 years, most recently as Eastern regional manager, flight.

During his career with American Hobbs has been based at Washington, Newark and New York, as well as other cities. He is a Lieutenant-Colonel in the Air Force Reserve.

Also at American, Roger F. Burkhardt has been named to head the recently formed Sales Service Training Div. Taking over Burkhardt's former position as Director of Reservations Services will be Richard F. Lambert. Lambert is former Director of Administration for American's southern region.

### Transport

Francisco Bonilla has been appointed general manager of LACSA Airlines, a Pan American World Airways affiliate. He is former assistant general manager for LACSA, and has been with the PAA organization since 1942.

Chester A. Ptashinski has been named manager of maintenance training and publications for Continental Air Lines. He replaces Harold Servey, and has been with Continental for 11 years.

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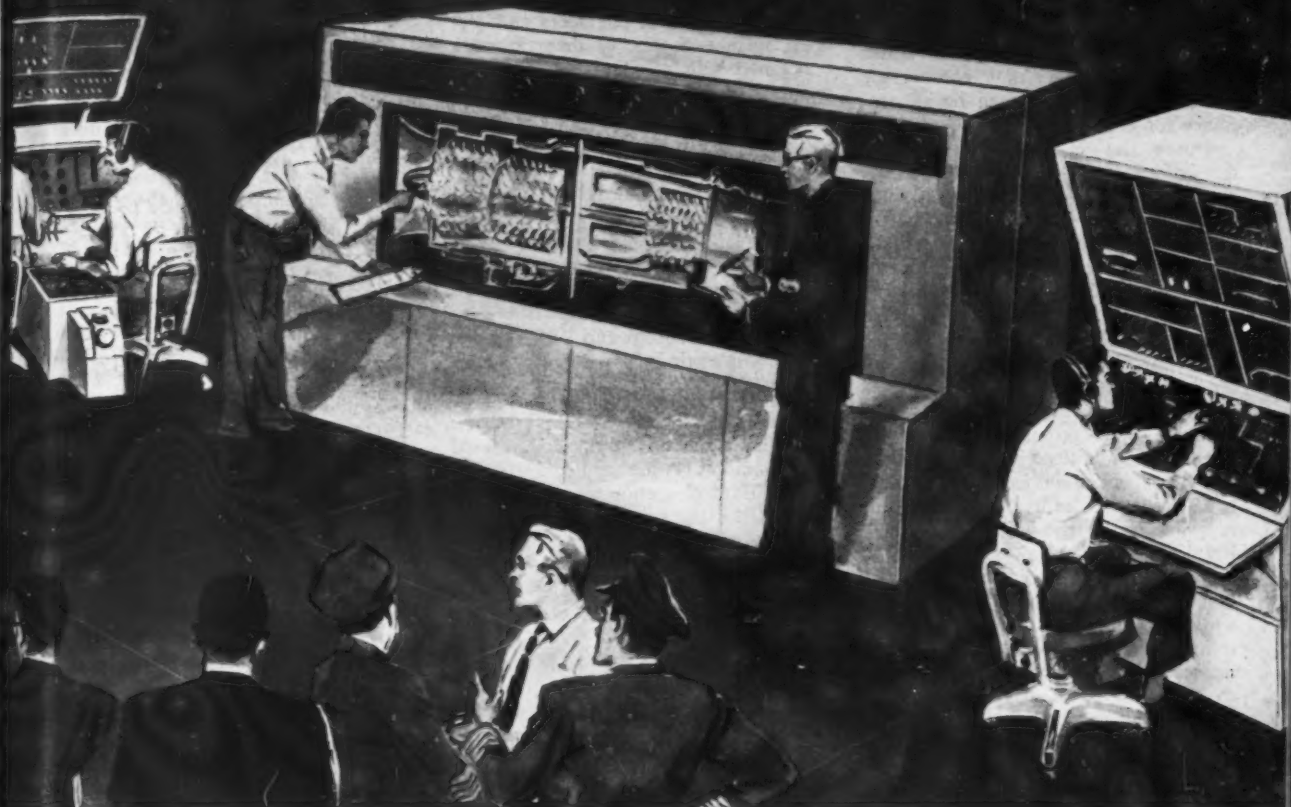
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## LETTERS

### Applauds Editorial

I like your editorial, "Our 'People's Factories.'" There are a great many things like this that would go towards balancing our budget, the sum total of which would amount to something. In this particular instance, and from my personal observation and experience, industry can do a much cheaper job on overhaul and maintenance than either of the services. The only comparable basis would be direct man hours necessary for comparable jobs.

This is not in any way to criticize the services. They are saddled with a tremendous amount of supervision, plus Civil Service, which to say the least is not too efficient. Industry can make a profit on overhaul and maintenance and pay the Government taxes on that profit.

The above comments apply to the larger portion of the work they are doing now, as I realize the services must have some of the smaller jobs of checking done promptly and without ferrying. In addition, it would be difficult to expect a service overhaul base to severely criticize its own work, while it is free to do that with industry, and if I do say it, improve the efficiency of the operation by keeping it on its toes.

Your friend discusses the test pilot situation, which has very little if anything to do with overhaul and maintenance, and certainly the industry has as good test pilots, if they are necessary, as the services. So, I think your Mr. Goodwin is slightly in error. As to solicitation of maintenance and overhaul by industry, I am sure that there is one large company that has been doing it for years, and I am pretty sure that industry as a whole has also solicited in vain.

So, I think you are just as right as can be in your personal views.

Guy W. Vaughn  
Bethel, Conn.

### About That Third Man

After reading both sides on the third man in the cockpit in the April 7th issue and the letters in the May 5th issue I can truthfully say I have not read that much fiction in a long time.

While I sympathize with anyone who is afraid of losing his job, it would be well for both the pilots and engineers to remember that DC-4 airplanes as well as Convairs and Martins have been flown a good many thousand hours with only two men in the cockpit. And that when technical advances make their job no longer necessary it will be abolished and the ranting, rav-

ing and name-calling will do them no good.

With the airlines all pleading poverty I think it is about time the CAA revised its crew complement criteria to fit the type of aircraft that will be placed in operation in the next few years. It should be taken out of the hands of the pilots, engineers and airlines, since each one of them is more concerned with grinding his own little axe than in doing what should be done.

It would be well for all concerned to realize, like it or not, that operation-wise all that is required to run an airline is a good airplane, a good pilot to fly it and a good mechanic to maintain it. The rest of the self-proclaimed so-called experts and specialists are just along for the ride. Most of them spend 90% of their time justifying their presence in the industry and 10% of the time doing their job.

Name withheld by request.

The ridiculous, one-sided, biased FEIA- and ATA-monopolized "Letters to the Editor" section of your magazine (pertaining to the 3rd crew member problem now before the Presidential Board) is an insult to the intelligence of any person who is at all acquainted with the duties of the 3rd crew member.

The need for a so-called "specialist engineer" is about as great as the need for sand in the Sahara! That seat should be used to provide greater security for the traveling public and

that can only be done with a qualified pilot occupying that seat!

F. K. Van Almelo, Jr.  
Emerson, N.J.

In the "Letters" section of the May 5, 1958 issue you made the comment that the pilots apparently have nothing to say in the pilot/flight engineer controversy. Have you considered that possibly the pilots do not want or expect the controversy to be settled by AMERICAN AVIATION magazine?

C. L. Anderson, Jr.  
Captain, Braniff Airways, Inc.  
Gasperine, Tex.

Mention is made in the Letters column of the May 5 AMERICAN AVIATION that there was no written reaction forthcoming from airline pilots concerning the "Conflict in the Cockpit" articles in the April 7 edition.

My judgment is that the apparent absence of support for Capt. Ruppenthal's presentation indicates calm unanimity on the part of the pilots for the irrefutable logic of his article.

Philipp M. H. Rimmler  
First Officer  
Trans World Airlines  
Levittown, N.Y.

Regarding "Conflict in the Cockpit," I would venture to guess that the reason you did not receive any letters to the editor from pilots is most certainly due to the fact that they have been so busy reading the propaganda being mailed from ALPA headquarters that they just haven't had the time. UAL pilots have been brainwashed to the tune of 39 pages of single-spaced typewriter-size paper in the past six weeks.

These letters have contained such bitter diatribes against a fellow union that it is a wonder that ALPA has been allowed to remain in the AFL-CIO. Among the more cogent reasons given for ousting the career engineer from the cockpit: (1) He has consistently tried to negotiate a position of second-in-command. (2) He has insisted on being paid more than the copilot.

I believe that the majority of pilots have now awakened to the fact that ALPA powers-that-be are now riding herd on a lost cause, and that a SECRET poll of individual pilots would reveal sentiments in favor of having the career engineer on the jets.

(Name withheld by request)  
Captain, United Air Lines  
San Francisco

### When & Where

#### JUNE

Reading Aviation Service, annual maintenance and operations meeting, Municipal Airport, Reading, Pa., June 6-7.  
Annual Skydive Derby, June 12. (For details contact: Ruth Nickell, 904 Nickell Rd., Topeka, Kan.)  
Air Mail Pioneers, 40th Anniversary Ball, Beverly Hilton Hotel, Beverly Hills, Calif., June 14.  
Aviation Distributors & Manufacturers Assn. annual meeting, Mount Washington Hotel, Bretton Woods, N.H., June 25-27.  
AIEE transportation conference, Stetler Hotel, Buffalo, N.Y., June 25-27.

#### JULY

All American Aviation Exposition, Pittsburgh-Connellsville Airport, so. of Pittsburgh, July 4-6.  
Annual All-Woman Transcontinental Air Race, San Diego to Charleston, S.C., July 4-8. (For details write: Air Race, Inc., 2611 E. Spring St., Long Beach 6, Calif.)  
National Air Races, Royal Aero Club, Baginton Airport, Coventry, England, July 10-12.  
Triennial inspection, NACA Ames Aeronautical Lab., Moffett Field, Calif., July 14-15.  
Assn. of Local & Territorial Airlines, quarterly regional meeting, Denver, Colo., July 24-25.  
Airline Electronics Engineering Committee meeting, Cosmopolitan Hotel, Denver, July 29-31.  
Soaring Society of America annual national contest, Bishop, Calif., July 29-Aug. 7. (For details contact: L. M. Licher, P.O. Box 66071, Los Angeles 66.)



## In Defense of CAA

Reading your funeral mass for the CAA and CAB in the April 21st issue, I am reminded of Mark Antony's speech about the good being interred with their bones. You do the CAA a great disservice in the face of their honest efforts to maintain the safety of the Nation's airlines.

The substance of your gripe is economics. Who, indeed, cannot carp at the apparent floundering of the Board in route award and fare cases? Do you not agree that the trouble with these bodies is not of their own making? The CAB members have to be political appointees, and therefore suffer pressure from all directions.

When the CAA would have established an all-out traffic control program that would have prevented recent mid-air collisions and near-misses, who failed to get them the money?

The CAA for years has tried to get the personnel they required for the jet age, but they stayed on a cheese and crackers diet until the TWA-UAL calamity focused attention on their needs.

The pressure on these agencies at times approaches the improper.

The Federal Aviation Agency may well be needed, but consider this. When shakeups produce new supervisors, especially in government, the new man is given wider authority, more money, and all he needs in tools to produce results. He then creates near-miracles which his predecessor might easily have done had he been given the same scope and advantages.

How easy for a new agency, free from pressures and with an unlimited budget, to sneer at the lackluster of our 20-year-old CAA!

If we are going to judge the accomplishments of these bodies by their economic shortcomings alone, we have poor memories for 1938 conditions. They built this one-hoss shay primarily for SAFETY!

Robert E. Commerce  
President, Air Line Dispatchers  
Association International  
Arlington, Va.

## Electrapane, not Nesa

We noticed an article in the March 24th issue of AMERICAN AVIATION on Pages 24 and 25, "Accessory report for U.S. turbine transports." You listed for de-icing windshields under the

Douglas DC-8 that the windshield was supplied by Libbey-Owens-Ford and was referred to as a "Nesa" windshield. Nesa is a trade name used by our competitor, Pittsburgh Plate Glass Co. We do supply the windshields for the DC-8 but our trade name for this windshield is "Electrapane."

J. W. Blumer  
Manager, Aircraft Sales  
Libbey-Owens-Ford Glass Co.  
Toledo, Ohio

## Add one, United Control

... in the excellent review of aircraft systems and accessories which appeared in your March 24 issue, we would like to make one addition to your list: United Control also supplies the windshield de-icing controls for the Douglas DC-8.

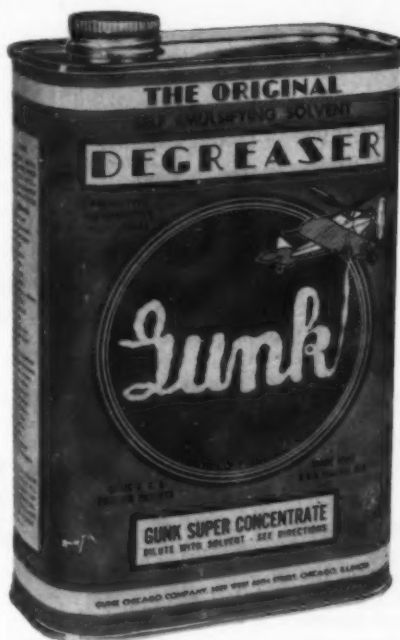
Howard H. Suskin  
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United Control Corp.  
Seattle, Wash.

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**ARTHUR F. "ART" MATTHEWS** has been an invaluable member of the F-101 "Team," serving as Assistant Project Engineer over power plant, hydraulics, controls and landing gear. Art and his group displayed a high degree of ingenuity in solving the many hundreds of mechanical design problems encountered in developing the F-101. He was recently appointed Project Development Engineer, and in this capacity monitors all development test programs related to the Voodoo airplanes.

From one basic design has grown the versatile Voodoo family of jet fighters pictured above. First, the long range all-weather fighter-bomber F-101A, the fastest operational airplane in the world. Second, the RF-101 reconnaissance Voodoo, holder of three transcontinental speed records. The third member of the Voodoo family is the F-101B, a supersonic atomic missile-carrying interceptor.

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JUNE 2, 1958



## WEST COAST TALK

by Fred S. Hunter

### Why Lockheed is Using Ames Windtunnel; Others Studying Supersonic Jet Transports Too

We pick up interesting reports that Lockheed has been in the windtunnel at Ames Laboratory with a supersonic transport design. This brings to mind an observation made at the recent annual shareholders' meeting by Robert E. Gross during a discussion of Lockheed's future transport program. Yes, said Gross, a supersonic jet transport is one of several studies going on at Lockheed. Then he went on to point out that designing a supersonic transport involves something more than just designing an airplane to go that fast. The difficulty, he said, is to come up with an airplane that is economically attractive; in other words, one to make money.

Gross indicated that until recently the chances of combining performance and profits hadn't looked too good. But he hinted that lately something in the way of a breakthrough had occurred. We thought, at the time, that he might be referring to powerplant developments—a turbofan, perhaps, or a medium pressure ratio engine such as GE's J93. But now, in view of the Ames news, we wonder if he may not have had an aerodynamic rather than a propulsion break-through in mind. The windtunnel at Ames spells high Mach numbers in our book.

For those who may be wondering if Lockheed is the only aircraft manufacturer engaged in studies for a supersonic jet transport, we hasten to report that the answer is no. Boeing, Convair and Douglas also are engaged in similar studies. There is, as a matter of fact, an Air Force study project for a military supersonic transport in the works, and all the companies have been invited to submit proposals. The requirement, we hear, is strictly transport, includes no provision for a tanker conversion and specifies the airplane is to be designed for operation at present airports. There's no telling how long it may take for an Air Force study project to move up into a Phase I competition—if ever—but keep your eye on this one. The way to get a running start on a commercial supersonic jet transport would be to get a military design contract first.

Reason North American gets J85 engines for its supersonic twin-jet UTX utility trainer before Northrop gets a set for its YT-38 twin-jet trainer is very simple. All NAA needs for its UTX are dry engines. Northrop has to have afterburner engines. Northrop gets ground test engines in September; flight articles in November. NAA, incidentally, has picked J. O. Roberts to take the UTX aloft on its first flight. Roberts is the NAA engineering test pilot who first achieved Mach 2 with the F-107.

Hughes Aircraft will have a work force of 150 operating at Palmdale by mid-summer. Work is nearing completion on a 12-acre site on the south side of the airport where the 36,000-sq.-ft. former Volitan hangar is being remodeled for Hughes for flight-testing of fire-control systems.

The Jet Age is almost, but not quite, here. Witness the Navy's annual Air Weapons Meet. Out of six light attack squadrons competing, four Grumman F9F-8B Cougar teams and two Douglas AD Skyraider teams, the versatile ADs captured second place in air-to-ground rocketry, high-dive weapons delivery and loft bombing, while placing third in the dive-bombing competition.

Curtiss-Wright is installing anti-icing inlets in the British-made TJ37 jet engines and changing the accessory drives to fit the Lockheed JetStar to complete CAA type certification of the powerplant for the U.S. The engine, in production in Britain, is approved for military supply.

The three numerals adorning the license plate of the automobile driven by Henry C. Voss, superintendent of the Douglas DC-8 assembly plant at Long Beach, are "707." But don't get any wrong ideas. Henry couldn't help it. In California, no special reservations or substitutions on auto license plates are allowed and you take what you get.



# STATISTICS

## Summary of U.S. Airline Traffic for February 1957 vs. February 1958

Compiled by American Aviation Publications from Official CAB Data

Airlines	Originating Passengers			Revenue Passenger Miles (In Thousands)			Total Ton-Miles Rev. Traffic			% Available Ton-Miles Used	
	1958	1957	% Change	1958	1957	% Change	1958	1957	% Change	1958	1957
<b>DOMESTIC</b>											
American	506,949	514,830	-1.5	326,262	340,907	-4.3	39,748,197	40,852,927	-2.7	52.0	57.0
Braniff	159,786	143,624	11.3	67,685	59,890	13.0	7,304,291	6,377,312	14.5	45.3	45.8
Capital	271,366	253,378	7.5	104,587	94,900	10.2	10,934,750	9,762,546	12.2	44.0	45.3
Continental	56,668	53,914	4.0	24,784	19,844	24.9	2,430,516	2,091,337	15.8	42.1	45.1
Delta	208,548	195,125	6.9	106,409	99,599	6.8	11,741,705	10,109,082	16.2	48.2	54.8
Eastern	580,427	598,111	-3.0	338,702	377,458	-10.3	34,896,984	38,867,288	-10.2	48.3	43.7
National	124,228	138,710	-10.5	88,021	101,758	-13.5	9,426,245	10,793,834	-12.7	47.0	54.5
Northeast	59,748	38,755	54.2	32,307	9,942	224.9	3,326,026	1,021,681	225.5	40.3	45.2
Northwest	95,894	82,505	16.2	59,367	52,636	12.8	6,977,359	6,207,899	12.4	42.8	44.0
Trans World	307,823	285,099	8.0	233,712	212,173	10.2	25,529,473	23,827,654	7.1	50.7	50.6
United	444,709	409,388	8.6	296,687	288,392	2.9	35,670,070	34,363,538	3.8	52.8	53.0
Western	77,834	96,987	-19.8	39,989	46,784	-14.5	4,273,159	4,982,005	-14.2	48.6	59.3
<b>TOTALS</b>	<b>2,893,380</b>	<b>2,810,436</b>	<b>3.0</b>	<b>1,718,512</b>	<b>1,704,283</b>	<b>0.8</b>	<b>192,458,795</b>	<b>189,257,103</b>	<b>1.7</b>	<b>49.2</b>	<b>50.2</b>
<b>INTERNATIONAL</b>											
American	11,223	12,633	-11.2	11,036	9,983	11.4	1,462,114	1,365,511	7.1	69.8	78.8
Braniff	4,007	2,811	42.5	7,941	5,859	35.5	969,404	732,195	32.4	49.4	54.2
Delta	5,752	5,478	5.0	5,984	5,905	1.3	712,604	709,220	0.5	50.6	59.4
Eastern	19,405	20,760	-23.7	28,111	27,440	31.3	3,036,508	3,090,985	-27.0	57.9	59.8
San Juan	1,745	6,587	73.9	1,370	145,417	53.3	145,417	3,090,985	27.0	57.9	59.8
Bermuda	4,338	6,587	62.6	6,587	744,098	62.6	744,098	3,090,985	27.0	57.9	59.8
Mexico City	11,916	9,856	20.9	7,618	6,216	22.6	884,976	694,690	27.4	48.3	61.1
National	7,494	6,737	11.2	16,425	14,969	9.7	3,326,436	3,119,724	6.6	57.0	61.4
Northwest	1,506	1,417	6.3	4,052	3,939	2.9	449,279	434,290	3.5	64.4	67.8
Hawaiian	10,474	11,096	-5.6	14,159	14,925	-5.1	2,037,363	2,008,110	1.5	63.6	65.8
Panagra	93,762	94,096	-0.4	93,456	86,322	8.3	13,334,679	12,622,832	5.6	65.3	65.7
Pan American	58,362	52,953	10.2	73,070	68,787	6.2	10,910,825	10,697,033	2.0	50.8	58.7
Latin American	17,976	19,241	-6.6	62,414	69,274	-9.9	8,763,127	9,498,682	-7.8	61.3	65.8
Pacific	1,498	2,135	-29.8	4,272	5,913	-27.8	477,135	636,190	-25.0	52.5	57.5
PDX/SEA-HON	2,111	3,045	-30.7	2,533	3,481	-27.2	441,131	531,978	-17.1	46.8	38.8
Alaska	14,095	11,355	24.1	38,178	28,792	32.6	5,351,374	4,543,507	17.8	53.5	64.4
TWA	6,078	6,250	-2.8	15,110	15,573	-3.0	1,701,900	1,737,631	-2.1	52.0	59.7
United	1,593	2,477	-36.5	2,477	2,477	0.0	272,693	272,693	0.0	69.8	69.8
Western	270,531	259,863	4.1	386,469	367,400	5.2	54,096,851	52,422,378	3.2	57.9	62.7
<b>TOTALS</b>	<b>270,531</b>	<b>259,863</b>	<b>4.1</b>	<b>386,469</b>	<b>367,400</b>	<b>5.2</b>	<b>54,096,851</b>	<b>52,422,378</b>	<b>3.2</b>	<b>57.9</b>	<b>62.7</b>
<b>LOCAL SERVICE</b>											
Allegheny	25,274	26,128	-3.3	4,238	4,479	-5.4	436,479	459,544	-5.0	38.6	38.3
Bonanza	15,065	10,889	38.4	3,488	2,469	41.3	246,772	246,772	0.0	46.5	45.8
Central	9,009	4,436	39.9	1,725	1,327	30.1	176,888	138,509	27.7	28.3	24.3
Frontier	16,635	14,365	15.8	4,589	4,128	11.2	510,587	466,151	9.5	59.1	53.0
Lake Central	12,784	10,611	20.5	2,044	1,682	21.5	208,040	173,333	20.0	37.7	39.2
Mohawk	27,300	27,370	-0.3	4,803	5,114	-6.1	487,840	517,195	-5.7	46.2	49.2
North Central	50,504	42,981	17.5	8,200	6,922	18.5	832,275	701,883	18.6	43.7	46.7
Ozark	30,852	22,160	39.2	5,041	3,465	45.5	515,113	360,789	42.8	45.0	36.4
Pacific (SWA)	26,262	21,483	22.2	5,890	4,693	25.5	589,035	465,055	26.7	50.0	48.4
Piedmont	25,379	22,291	14.9	5,063	4,606	9.9	510,327	469,468	8.7	42.3	44.4
Southern	15,203	14,305	6.3	2,744	2,552	7.5	282,700	262,053	7.9	34.7	40.3
Trans Texas	16,882	17,593	-4.1	3,794	4,016	-5.5	408,099	423,248	-3.6	37.5	35.2
West Coast	17,881	16,620	7.6	3,249	2,998	8.4	321,881	295,158	9.1	42.9	42.7
<b>TOTALS</b>	<b>289,030</b>	<b>253,332</b>	<b>14.1</b>	<b>54,868</b>	<b>48,451</b>	<b>13.2</b>	<b>5,624,781</b>	<b>4,979,158</b>	<b>13.1</b>	<b>43.0</b>	<b>42.7</b>
<b>ALASKAN</b>											
Alaska (System)	5,443	4,236	28.5	1,958	1,516	29.2	380,450	473,309	-19.6	36.5	43.7
Alaska Coastal	2,311	2,140	8.0	215	189	13.8	28,577	24,640	16.1	64.2	82.9
Cordova	879	946	-7.1	123	180	-31.7	19,674	41,111	-52.2	34.6	91.8
Ellis	2,279	2,317	-1.7	139	150	-7.3	18,614	18,614	0.0	65.2	92.6
No. Consolidated	1,150	1,089	5.6	346	348	-0.6	98,745	162,520	-39.3	60.4	93.9
Pacific Northern	5,520	5,164	6.9	4,581	4,672	-2.0	748,139	728,623	2.7	43.7	96.7
Reeve	1,343	1,63	723.9	429	163	285.9	162,061	37,697	329.9	43.7	100.0
Wien	1,135	1,062	6.9	342	386	-11.4	182,362	346,938	-47.4	67.5	97.8
<b>TOTALS</b>	<b>20,055</b>	<b>17,378</b>	<b>15.4</b>	<b>8,333</b>	<b>7,424</b>	<b>9.3</b>	<b>1,637,370</b>	<b>1,833,452</b>	<b>-10.7</b>	<b>44.4</b>	<b>91.3</b>
<b>HELICOPTER SERVICE</b>											
CHI Helicopter	6,280	1,146	448.0	110	18	511.1	12,254	4,114	197.9	27.9	35.1
Los Angeles Airways	1,705	2,483	-31.3	65	82	-20.7	11,007	12,640	-13.1	54.1	57.3
New York Airways	4,119	3,192	29.0	81	59	37.3	10,079	8,298	21.5	38.0	36.1
<b>TOTALS</b>	<b>12,104</b>	<b>6,821</b>	<b>77.5</b>	<b>256</b>	<b>159</b>	<b>61.0</b>	<b>33,340</b>	<b>25,072</b>	<b>33.0</b>	<b>37.1</b>	<b>44.2</b>
<b>TERRITORIAL</b>											
Caribair	23,598	20,821	13.3	1,653	1,490	10.9	179,426	162,716	10.3	68.1	62.0
Hawaiian	23,437	26,712	-12.3	3,504	4,098	-14.5	385,596	455,481	-15.4	54.5	57.4
Trans Pacific	9,802	11,854	-17.3	1,370	1,754	-21.9	118,588	150,843	-21.4	55.4	58.6
<b>TOTALS</b>	<b>56,837</b>	<b>59,388</b>	<b>-4.3</b>	<b>6,527</b>	<b>7,342</b>	<b>-11.1</b>	<b>683,610</b>	<b>769,040</b>	<b>-11.1</b>	<b>57.6</b>	<b>58.7</b>



# Airlines Report Executive Salaries

Annual reports of 1957 salaries, other compensation and shareholding of officers and directors of the following airlines have been filed with the Civil Aeronautics Board. Formerly designated Schedule E reports by the CAB, these are now designated Schedule G-42 reports.

Figures given are salaries unless otherwise stated.

## AAXICO AIRLINES

OFFICERS: Howard J. Korih, pres., \$44,625 salary; Jean G. Helvey, vp., \$12,000 salary, \$7,000 bonus & indir.; E. P. Odenwalder, secy.-treas., \$10,200 salary, \$2,000 bonus & indir.

## ALLEGHENY AIRLINES

OFFICERS: Leslie O. Barnes, pres. & dir., \$25,000 salary, \$1,620 expenses; Walter J. Short, vp. & treas., \$14,375 salary, \$971 expenses; Everett K. Arnold, vp. & secy., \$13,300 salary, \$1,478 expenses; David L. Miller, vp.-traffic & sales, \$14,050 salary, \$1,675 expenses; Richard G. Dinning (1-29-57\*), vp., \$12,925 salary, \$369 expenses; W. Dale Hay (1-29-57\*), asst. controller, \$7,700 salary, \$365 expenses; George F. Gerth (3-1-27\*), asst. treas., \$7,500 salary, \$46 expenses; Harvey M. Thompson, dir. of flying operations, \$15,056 salary, \$393 expenses.

NOTES: \*Date of assuming position.

DIRECTORS: Robert M. Love, chm. of bd., \$33 expenses; Robert F. George, \$1,023 expenses. PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Hale, Stimson, Russell & Nickerson, New York City, legal services, \$21,311; R. Dixon Speas, Long Island, N.Y., maintenance survey, \$11,000.

## BONANZA AIR LINES

OFFICERS AND DIRECTORS: Edmund C. Converse, pres. & dir., \$17,000 salary, \$1,822 expenses; L. G. McNeil, chm. of bd., \$583 expenses; G. Robert Henry, exec. vp., \$14,667 salary, \$3,264 expenses; Florence J. Murphy, vp. & secy., \$11,667 salary, \$1,351 expenses; Myron W. Reynolds, vp.-opns., \$15,234 salary, \$1,651 expenses; William J. Mitchell, vp.-sales, \$10,500 salary, \$4,146 expenses; R. H. Herrstein, vp. & treas. (resigned 11-8-57), \$11,539 salary, \$625 expenses; Earl C. Jochim, comp. & asst. secy., \$10,434 salary, \$1,570 expenses; Robert J. Scherer, asst. treas., 3-10-56 to 11-8-57, \$10,058 salary, \$1,056 expenses; Jack Arant, asst. to pres. (2-1-57\*), \$8,250 salary, \$6,877 expenses; Donald R. Neilson, asst. comp., \$6,850 salary, \$983 expenses; Vi M. Geer, asst. secy., \$5,550 salary; William C. Burt, asst. secy. (10-1-57\*), \$20 expenses; Roger Converse, dir., \$181 expenses.

NOTES: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Kofeen & Burt, Washington, D.C., legal services, \$11,150; Albert Grisard, Wash., legal services, \$14,096; Paul Marwick, Mitchell & Co., Wash., audit services, \$13,152.

## BRANIFF AIRWAYS

OFFICERS: Charles E. Board, pres., \$69,000 salary, \$5,078 bonus & indir.; J. W. Miller, exec. vp., \$44,500 salary, \$3,203 bonus & indir.; C. G. Adams, vp.-finance & secy., \$32,250 salary, \$2,284 bonus & indir.; R. C. Shrader, vp., \$18,000 salary, \$1,215 bonus & indir.; R. V. Carlton, vp.-opns., \$34,500 salary, \$2,453 bonus & indir.; Rex Brack, vp.-traffic & sales, \$23,000 salary, \$1,590 bonus & indir.; Malcolm Harrison, vp.-industrial relations, \$19,500 salary, \$1,328 bonus & indir.; Walter Henshel, vp.-public relations, \$19,500 salary, \$1,328 bonus & indir.; V. A. Kropff, asst. vp.-exec. projects, \$13,050 salary, \$843 bonus & indir.; O. W. Crane, treas., \$14,306 salary, \$938 bonus & indir.; R. L. Barrier, asst. treas. & budget dir., \$11,250 salary, \$709 bonus & indir.; E. J. Beisecker, asst. treas., \$11,250 salary, no bonus & indir.; Loyd Eden, asst. treas., \$11,250 salary, \$709 bonus & indir.; Valta Bowdware, asst. secy., \$5,025 salary, \$241 bonus & indir.; L. M. Holding, vp.-purchasing & stores (4-1-57\*), \$11,850 salary, \$754 bonus & indir.

DIRECTORS: (Figures shown are directors' fees.) Fred Jones, \$600; George Butler, \$200; Roger J. Whiteford, \$600; William A. Blakley, \$600; Theo. N. Law, \$600; G. D. Murdoch, \$600; W. W. Flenniken, \$600; Milton McGreevy, \$400; James H. Walker, \$200.

NOTE: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Whiteford, Hart, Carmody & Wilson, Washington, D.C., legal services, \$66,000.

## CAPITAL AIRLINES

OFFICERS: J. H. Carmichael (8-1-57\*), chm. of bd., \$58,200 salary; David H. Baker (8-1-57\*), \$25,000 salary; R. G. Lochiel, vp. treas. & dir., \$33,000 salary; J. W. Austin, \*\* vp. & dir., \$30,800 salary; J. B. Franklin, vp., \$28,600 salary; R. J. Wilson, vp., \$24,475 salary; Hayes Dever, exec. asst. to pres. & secy., \$19,250 salary; S. B. Goldthorpe (7-23-57\*), asst. vp. & comptroller, \$17,292 salary; R. W. Hardisty (7-23-57\*), asst. vp., \$17,142 salary; S. T. McAlister (7-23-57\*), asst. vp., \$13,925 salary; Nelson B. Fry, \*\* asst. vp., \$13,900 salary; Joel Daniels (7-23-57\*), asst. vp., \$9,075 salary; Walter B. Smith (7-23-57\*), asst. secy., \$8,435 salary; R. P. Wright (7-23-57\*), asst. treas., \$16,200 salary; O'Farrell Estes (7-23-57\*), asst. treas., \$13,058 salary.

DIRECTORS: Charles H. Murchison, \$9,075 salary; J. D. Stetson Coleman, \$500 dir. fee; William V. Couchman, \$700 dir. fee; David L. Frawley, \$500 dir. fee; George R. Hann, \$1,600 dir. fee; Crawford T. Johnson, Jr., \$400 dir. fee; Arthur F. Kroeger, \$1,400 dir. fee; C. Bedell Munro, \$1,500 dir. fee; Brouwer D. McIntyre, \*\*\* \$300 dir. fee; Thomas D. Neelands, Jr., \$1,200 dir. fee; Harold B. Smith, \$700 dir. fee; and James R. Stockton, \$500 dir. fee.

NOTES: \*Date of assuming position. \*\*Resigned Dec. 31, 1957. \*\*\*Resigned July 31, 1957.

PERSONS OTHER THAN directors, officers and employees who were paid more than \$10,000 for personal services during 1957 were: Lewis Edwin Ryan, Washington, D.C., advertising, \$13,909; Kenyon & Eckhardt, New York City, advertising, \$487,407; Adair, Ulmer, Murchison, Kent & Ashby, Jacksonville, Fla., legal services, \$146,892; Melbank, Tween & Hope, N.Y.C., legal services, \$45,112; Lybrand, Ross Bros. & Montgomery, Pittsburgh, audit and tax, \$25,197; Boersma Travel Service, Ann Arbor, Mich., agency commissions, \$15,020; Maloney & O'Connor Travel Bureau, Niagara Falls, N.Y., agency commissions, \$13,845; James Wagnear Travel Bureau, Grand Rapids, Mich., agency commissions, \$13,439; John B. St. John, Penlynn, Pa., actuary fees, \$11,194, and Aviation Advisory Service, N.Y.C., management planning, \$10,873.

## CARIBBEAN ATLANTIC AIRLINES

OFFICERS AND DIRECTORS: Dionisio Trigo, pres. & dir., \$16,500 salary; Benigno Trigo, vp. & dir., \$6,500 salary; Jose M. Sierra, vp.-opns. & dir., \$13,000 salary, \$850 bonus & indir.; Robert B. Forrest, vp.-traffic & sales, & dir., \$10,000 salary, \$650 bonus & indir.; L. A. Lockhart, treas. & dir., \$8,600 salary, \$575 bonus & indir.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Whiteford, Hart, Carmody & Wilson, Washington, D.C., legal services, \$10,671.

## CENTRAL AIRLINES

OFFICERS: Keith Kahle, pres., \$15,550 salary, \$7,863 expenses; F. E. Howe, exec. vp.-treas., \$14,550 salary, \$1,702 expenses; R. L. Waggenack, vp.-opns. (6-26-57\*), \$12,917 salary, \$451 expenses; A. S. Aldridge, vp.-traffic & sales, \$10,558 salary, \$1,692 expenses; C. E. Lundstrom, sec. & asst. treas., \$8,458 salary, \$173 expenses; A. H. Pritchett, asst. secy., \$5,010 salary, \$16 expenses; Betty Gahagan, asst. secy., \$4,478 salary; Pearl Crawford, asst. secy. (6-26-57\*), \$275 salary; F. Kirk Johnson, chm. of bd., \$14,970 salary, \$179 expenses.

NOTE: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Pogue & Neal, Washington, D.C., attorney, \$14,577; Air Market Assoc., Ft. Worth, research, \$11,059.

## CONTINENTAL AIR LINES

OFFICERS: L. H. Mueller, chm. of bd., no salary, \$200 bonus & indir.; Robert F. Six, pres., \$55,000 salary; Joseph A. Uhl, vp. treas. & dir., \$22,000 salary; C. C. West, Jr., vp. & dir., \$30,000 salary; O. R. Haueter, vp.-operations, \$25,000 salary; Lynn H. Dennis, vp.-pass. serv., \$18,500 salary; Stanley O. Halberg, vp.-pub. rel. & adv., \$14,500 salary; Harding L. Lawrence, vp. exec. adm. sales, \$20,000 salary; Charles H. Calhoun, vp.-engr. & maint., \$18,500 salary; Harold B. Seifert, vp.-operation adm., \$15,500 salary; S. B. Redmond, secy., \$14,000 salary; Paul F. Krieth, Jr., asst. secy., \$10,500 salary.

DIRECTORS: (Figures are directors' fees.) Lawrence C. Ames, \$200; Sheldon G. Cooper, \$200;

F. L. Ehrman, \$200; Marco F. Hellman, \$200; J. G. Holland, \$200; Frank H. Rickerson, Jr., \$200; Robert J. Smith (11-20-57\*), \$100; Arnold G. Beckman, \$100; Walter P. Peepcke, \$100; Ross Stewart, \$100.

NOTE: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Cooper, White & Cooper, San Francisco, legal services, \$35,486; Holland & Hart, Denver, legal services, \$16,241; Leasure & Schurer, Washington, D.C., legal services, \$37,146; Galen E. Broyles Co., Denver, advertising, \$864,906; Walker & Crenshaw, New York City, advertising, \$38,289; Charles Butler & Associates, N.Y.C., consultants, \$11,636; Lennen & Newell, Inc., N.Y.C., advertising, \$30,619; World Wide Travel System, Colorado Springs, Colo., commissions \$10,032; Pereira & Luckman, Los Angeles, engineering, \$10,711.

## DELTA AIR LINES

OFFICERS: C. E. Woolman, pres., gen. mgr. & dir., \$56,533 salary; Leigh C. Parker, vp.-traffic & sales & dir., \$29,867 salary; Charles H. Dolson, vp.-opns. & dir., \$29,867 salary; Todd G. Cole, vp.-adm. & finance & dir., \$27,292 salary; R. S. Maurer, vp.-legal & dir., \$20,800 salary; W. T. Beebe, vp.-personnel, \$19,733 salary; Erle Cocke, Jr., vp.-civil affairs, \$19,413 salary; T. M. Miller, asst. vp.-traffic & sales, \$19,413 salary; R. H. Wharton, asst. vp.-personnel, \$12,800 salary; C. H. McHenry, secy., treas. & dir., \$1,280 salary; Catherine Fitzgerald, asst. treas., \$6,720 salary; Hugh Saxo (5-1-57\*), asst. treas., \$11,100 salary; J. R. Howell (5-1-57\*), \$10,374 salary; R. W. Freeman, chm. of bd., \$1,280 dir. fee.

NOTE: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Arthur Anderson & Co., Atlanta, Ga., auditing and tax services, \$15,302; Cresap, McCormick & Paget, New York City, management consultants, \$4,884; Ernst & Ernst, Atlanta, management consultants, \$25,344; Pogue & Neal, Washington, D.C., legal fees and services, \$32,211; S. A. Stewart, Hartford, Conn., special & professional services, \$10,000.

## THE FLYING TIGER LINE

OFFICERS AND DIRECTORS: Samuel B. Mosher, chm. of bd., \$400 salary; Robert W. Prescott, pres. & dir., \$44,667 salary; Fred Benninger, vp. & treas., \$27,833 salary; William Barling, vp., \$16,000 salary; George Cussen, vp., \$17,833 salary; Leonard Kimball, vp., \$11,767 salary; Frank Lynott, \$21,667 salary; Neil Berthoff, vp., \$13,880 salary; Vladimir Zimmerman, vp., \$3,750 salary; John Higgins, asst. vp., \$15,164 salary; O. R. Burghardt, secy. & asst. treas., \$17,000 salary; Ralph Stump, asst. secy., \$11,400 salary; Norman Meyers, asst. secy. & dir., \$400 fee; Allen T. Chase, dir., \$400 fee; Houston Rehrig, dir., \$400 fee; John C. Cosgrove, dir., \$400 fee; Boris Grosow, dir., \$100 fee; Ruth Axe, dir., \$100 fee; Arthur Linkletter, dir., \$100 fee; Charles Luckman, dir., \$100 fee; John Tyler, dir., \$100 fee.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Arthur Anderson & Co., Los Angeles, accounting, \$21,200; Meyers & Batzell, Washington, D.C., legal services, \$60,000; Coverdale & Clopitts, New York City, consulting engineers, \$45,830; Hixson & Jorgensen, Los Angeles, advertising, \$31,615.

## FRONTIER AIRLINES

OFFICERS AND DIRECTORS: C. A. Myhre, pres. & dir., \$21,876 salary; E. N. Levin, secy. & dir., \$7,800 salary; J. D. Lindsay, vp.-sales, \$12,500 salary; L. P. Blatter, treas., \$12,000 salary; E. W. Sexton, Jr., asst. treas., \$7,200 salary; E. B. Slocum, dir., \$450 bonus & indir.

NOTE: \*Date of assuming position.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Bowen & Scouth, Washington, D.C., legal services, \$23,340; Rippey, Henderson, Bucknum & Co., Denver, \$145,796.

## NORTHERN CONSOLIDATED AIRLINES

OFFICERS AND DIRECTORS: Raymond I. Petersen, pres., gen. mgr. & dir., \$18,000 salary, \$1,200 dir. fee; S. B. Fitzhugh, vp. treas. & dir., \$13,200 salary, \$1,200 dir. fee; Robert G. Miller, chm. of bd., \$11,665 dir. fee; Victor R. Davis, secy. & dir., \$10,560 salary, \$450 dir. fee; Marie A. Petersen, asst. secy., \$4,800 salary; Gordon R. Unwin, asst. treas. (4-1-57\*), \$9,125 salary; John A. Walatka, dir., \$13,477 salary, \$700 dir. fee; Charles J. Johnson, \$300 dir. fee.

PERSONS OTHER THAN officers, directors and employees who were paid more than \$10,000 for personal services during 1957 were: Theodore I. Seamon, Washington, D.C., legal services, \$15,000.

## SIDELIGHTS

**What the U.S. needs**—One advertising manager who's pleased as punch these days is Jack Laffin of Northrop. On April 17 President Eisenhower told a Washington audience that the U.S. needs "safety with solvency." That fine four-color ad series of Northrop has for some time been plugging "security with solvency." That's so close that Jack thinks somebody at the White House may have gotten Ike's phrase from a Northrop ad. Could be.

**What, no dedication ceremonies?**—Here's a new wrinkle on airport terminal dedications. Miami won't have any. George McSherry, the new boss at Miami International Airport, where new terminal is being completed, says every terminal is obsolete by time it's opened—so Miami will just keep expanding its facilities and never get around to having a dedication ceremony.

**Question of timing**—The two airport groups, American Assn. of Airport Executives and Airport Operators Council, met as far apart as possible this year—the former in Fresno, Calif., one week, the latter in San Juan, P.R., the following week. In 1959, AOC will go

to Portland, Ore., and AAAE goes to Savannah, Ga., at opposite ends of the country. But in 1960 they'll be just 500 miles apart—AOC in Columbus, O., and AAAE in New York City. Once they tried meeting in the same city the same week (Kansas City), but no one was happy about it except suppliers and hucksters who have to attend both conventions.

**No conflict of signals**—The OMNI station CEW at Crestview, Fla., is only about 90 miles from EVR at Evergreen, Ala. Those are famous initials in aviation—the former for C. E. Woolman, president of Delta, and the latter for E. V. Rickenbacker, chairman of Eastern. As one pilot reports, "close proximity, but no conflict of signals!"

**No Jack-come-lately**—Jack Gray of Atlanta is building up quite a record. He is now in his 48th year in aviation and 29 as manager of Atlanta's municipal airport.

**Still soaring, even in space age**—Despite current talk of space travel. "who's to be first on the moon." and Mach 3-plus production bombers, it's comfort-

ing to note that there are a few calm types that take all this in stride.

One excellent example is Paul Bikle, technical director at the Air Force's Flight Test Center, Edwards AFB, Calif., who sailed off with top honors for the third time in the 12th Annual Pacific Coast Soaring Championship. Holder of the International closed course 200-km. speed record and the No. 7 international diamond "C" award, Bikle will be a member of the 15-man U.S. team at the Olympic soaring championships in Poland.

**Momentous decision**—CAB has conceded, in enforcing on-time rules, that weather is to be treated as a condition which is not subject to the airlines' control!!!

**Collectors item**—Early copies of Western Air Lines' 1957 annual report are fast becoming collectors' items. There's much amused comment in the industry because of a certain event taking place in the back cover picture, which shows a street in Mexico City. Red-faced WAL officials hastily recalled the early copies, altered the picture, and reissued the report. But copies of the unexpurgated edition are still kicking around the industry.

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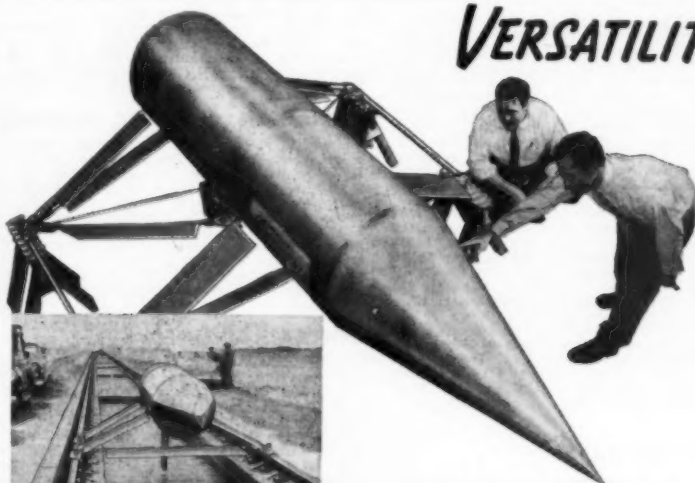
- 90-360 channel transmitter (50 kc spacing; 118-135.95 mc)
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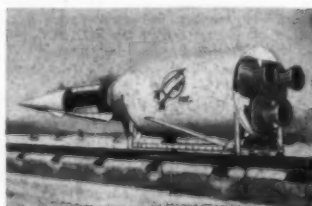
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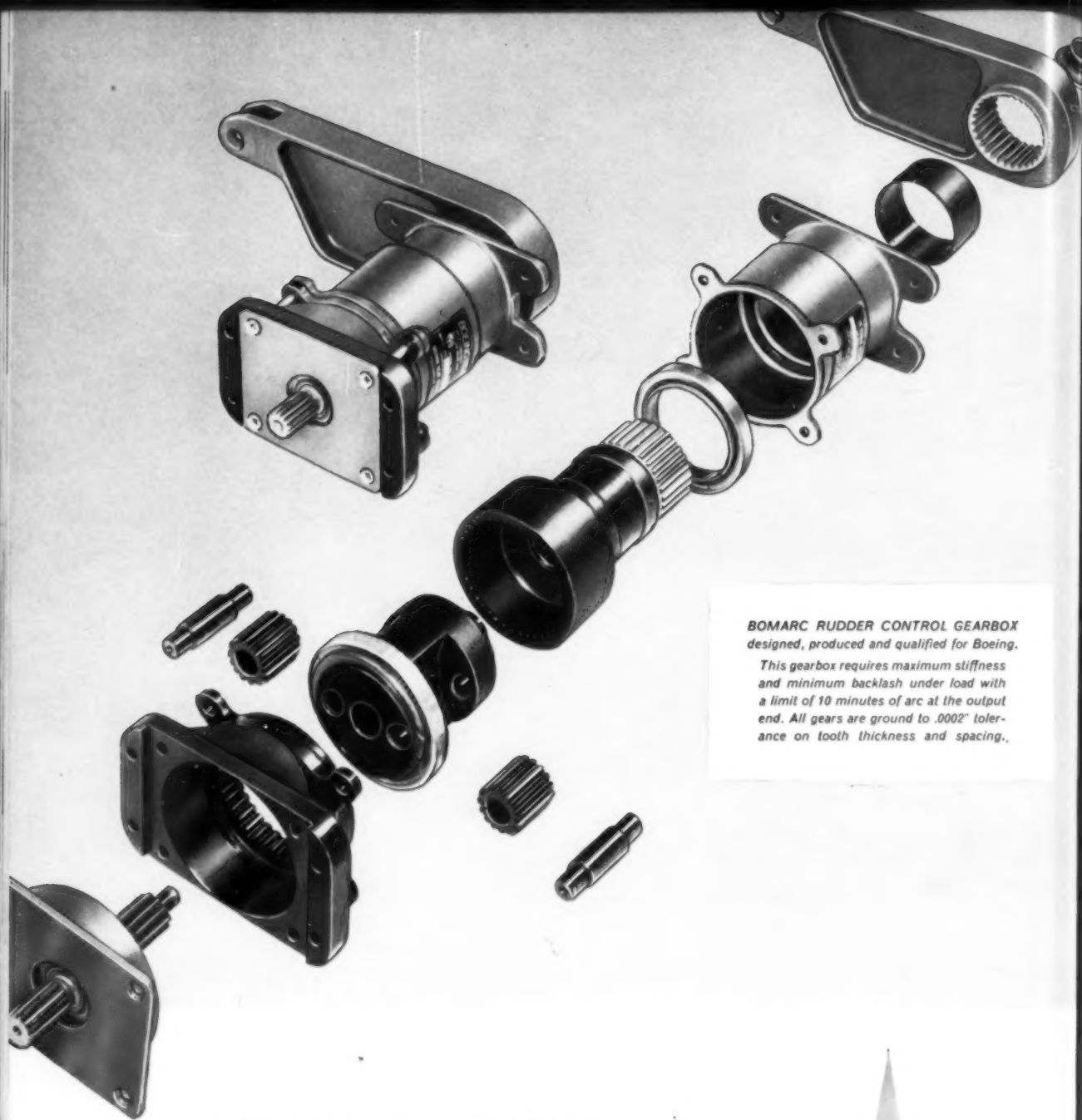


*Checking the lead of the internal gear used in the second stage of the Sikorsky S-58 Helicopter. Permissible lead error is only .0003 in. of face. This gear is finish cut at 50 Rockwell C. It's actually much harder than a good penknife blade.*

## Precision is our only product!

● The aeronautical age has given the word precision new scope. Tolerances have shrunk farther past the decimal point. Stresses and strengths have new dimensions. Yet, whatever the specifications are, I. G. W. still has just one product—precision.





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## TRANSPORT TRENDS

**There's bi-partisan support in Congress for a bill that would bar 12 subsidy-free trunk airlines** from ever returning to a subsidy status. Some members of both Commerce Committees, which would handle bills, favor enactment. At least one large trunk also backs the proposal. But time militates against chances of passage this year. Also, backers will have to overcome opposition of aviation leaders such as Sen. A. S. Mike Monroney (D-Okla.). With jet transports on the way, he says, legislation couldn't have come at a worse time. He foresees trouble ahead for carriers seeking equipment loans, claiming that banks will shy away from industry stripped of subsidy backstop.

**There's no basis for rumors that G. Joseph Minetti will resign** from the Civil Aeronautics Board to take a New York state government assignment. Minetti says he has no intention of leaving, likes his work, intends to stay.

**Final traffic results aren't in for May, but preliminary reports aren't too optimistic.** One major trunk says load factor wasn't as good as April. A regional trunk reports recent accidents have had adverse effect, that passenger-miles may equal May, 1957, but load factor is down. Revenues are up because of fare increase. April, last month for which complete statistics are available, showed 1.2% gain in passenger-miles from same month a year ago. But load factor of 59.94% was 2.36 percentage points less. This was seventh consecutive month that load factor has been below 60%.

**Air cargo business is substantially ahead of last year.** Recession seems to have had little effect. From Jan. 1 through first three weeks of May, the number of shipments picked up and delivered showed a 14.4% gain over same period last year. In last four weeks of the 1957 period, Railway Express Agency strike resulted in abnormally high air-freight traffic. Had traffic been normal in that period, 1958 gain would have been considerably greater.

**When C. E. Woolman, 69, president of Delta Air Lines was forced by his doctor to take a rest** following a sharp bout with the flu a few months ago, Todd G. Cole, v.p.-administration and finance, moved into temporary command. This answered a long-posed question as to who is actually No. 2 man in the airline. Woolman, who has always maintained full management control, has returned to his office fully recovered and rested.

**Airline bomb scares will force enactment of remedial legislation** in Congress this year. Senators received a CAA report listing 84 phony bomb tips in nine months of last year. Senate has already passed Sen. John Butler's bill providing stiffer penalties. House is almost certain to endorse the same bill, slapping \$5,000 fines and five-year jail terms on guilty cranks.

**Chances are good that a long-reluctant Congress** will approve a commercial aviation war-risk insurance program. What apparently softened resistance was Commerce Department's proposal to apply the program also to Civil Reserve Air Fleet planes, thus giving it defense overtones. Okayed by the House, the plan awaits Senate approval, which would give Commerce the green light to sell binders at \$100 per plane to U.S. international carriers. Premium rate would be set later, probably after a declaration of war.

**Long-range outlook in international cargo, is enough to stagger the imagination,** assuming potential market is tapped, according to Stanley H. Brewer, professor of transportation, Univ. of Washington. In study prepared for Boeing, Brewer predicts a 27-to-32% annual rate of growth between 1961 and 1965. In 1961, he estimates, carriers will haul 767 million ton-miles of international air cargo, figure will grow to 2.18 billion ton-miles.

## TRANSPORT At Deadline

# Clamps Go on Military Flying

Suggestions including almost everything from painting military jets red to grounding them have followed the May 20 collision of an Air National Guard jet trainer and a Capital Airlines Viscount in which 13 were killed over Brunswick, Md.

Congressional pleas for an "emergency plan" for "something now" were answered by White House action curtailing jet operations, but Presidential Advisor E. R. Quesada perhaps came closest to the heart of the situation when he told Congress "a Federal Aviation Agency is a vital necessity, and until there is such an agency created, the solution to our current air traffic control problems seems improbable."

Two days after the Brunswick, Md. collision, President Eisenhower put five clamps on military jets. At a meeting with Quesada and Reps. Prince Preston (D-Ga.) and Cliff Clevenger (R-Ohio), the President stated that:

1. Military student pilots flying near civil airways will be under Civil Aeronautics Administration control;
2. Military jets will not descend or operate under 25,000 ft. near civil airways;
3. Jet proficiency flying will be conducted away from civil airways;
4. So-called itinerant jet flights will file flight plans with CAA and be subject to CAA clearance;
5. Operational training flights must be made under immediate CAA control or must comply with Instrument Flight Rules.

At an emergency meeting of Air Coordinating Committee, military representatives agreed to cut back jet operations near civil airways under 20,000 ft. Chaired by Quesada, ACC consists of representatives from the three services, Department of Commerce, the Post Office, Treasury, FCC and Office of Defense Mobilization.

On the operating level, first returns from the emergency measures came from Fleet Air, Alameda, Calif., where all jets at Alameda and Moffett Field Naval Air Stations were grounded. Commanding officer RAdm. Murr E. Arnold said neither he nor his aides understood the new rules.

CAA Administrator James Pyle has announced government plans for five coast to coast "limited access free-ways" in which all planes would fly

IFR. Pyle terms the plan, scheduled for Sept. 21, as an early step to positive air control through universal IFR.

The big push is to positive air control, but CAB admits it has neither "men, money or machines" to handle such a system. In a recent report to Congress, CAB set a five-year minimum on an effective system, and said that if they attempted it with present facilities it would instantly ground 85% of the planes in the air.

The wheels are turning, but progress is necessarily slow. According to Quesada, there is not "a solution for this obtainable, measured in weeks." Pyle told Congressmen that there are "too many areas involved, too many bases involved, and too many aircraft in-

involved" for an overnight solution. Before the House Commerce Appropriations Subcommittee, Air Force Undersecretary Malcolm MacIntyre warned that "sometimes the emergency solution leads to more difficulties than it does improvements."

Congressional hearings are in full swing. A Federal Aviation Agency (see p. 12) is being considered by Sen. A. S. Mike Monroney's (D-Okla.) Aviation Committee, and Rep. John Blatnik (D-Minn.) began hearings in the House committee for Legal and Monetary Affairs on May 22 with an eye to the Federal Government's role in aviation Emergency hearings before Rep. Prince Preston's (D-Ga.) House Commerce Appropriations subcommittee were in session within hours after the Brunswick crash.

An early witness before Blatnik's committee, CAB Safety Director Oscar Bakke stated that on the basis of Eisenhower's five-point program it "would be overly optimistic to expect startling results tomorrow." Bakke admitted that anything would be an improvement over present conditions, but felt that the President's plan was par-

## ATA Has a Five-Point Plan Too

Chief among the immediate remedies proposed by the airlines and the airline pilots to avoid repetitions of two recent mid-air crashes was extension of the "Golden Triangle" to most of the East Coast and the heaviest traveled routes west of Denver, Colo.

Under this plan, proposed by the Air Line Pilots Assn. and the Air Transport Assn., all users of the airspace in these areas would voluntarily adopt a program of positive air traffic control. The airlines now operate under Instrument Flight Rules above 18,000 feet anywhere in the country, and above 9,500 feet in the so-called "Golden Triangle"—between Washington, New York and Chicago.

Under these IFR procedures, airliners must file flight plans with Civil Aeronautics Administration control centers, fly only on Federal airways and be subject to complete control by those centers. However, present practice protects airliners only from other airliners. This proposal would have military and private flyers voluntarily comply with these procedures within the designated areas to substantially broaden the protection they afford.

The Air Transport Assn. outlined a number of other points that would

help increase protection from further mid-air crashes. Most significant among these were proposals calling for:

1. Immediate establishment of positive control airways, and extension of these as new facilities become available;
2. A detailed review of local military training practices in cooperation with the military services;
3. Separation of traffic flying under visual and instrument flight rules by requiring VFR traffic to move 500 feet above or below IFR traffic;
4. Establishment of Control Zones at every airport where CAA-approved instrument approach procedures are used; and
5. Lowering the floor of the Continental Control Area from the present 24,000 feet to 15,000 feet.

Although thoughtful ATC planners were hopeful that adoption of these recommendations would significantly improve today's air traffic conditions, nearly all were agreed that the ultimate solution would not be possible until an independent Federal Aviation Agency existed to oversee use of the airspace by all classes of flyers—commercial, military and private.

ticularly weak in treating heavily congested areas.

Bakke also told the committee that CAB was working to prepare the way for this fall's jet service. He told Blatnik's group that while low-level mid-air crashes have decreased in recent years, the higher, faster jets' score was on the way up.

Although hearings are directed to the FAA, attention is being given by Monroney's group to the recent disasters. Monroney pointed out that "the speed age is only beginning" and that see-and-be-seen flying was on the way out. The committee heard James Pyle testify that CAA has worked with bad weather flying for many years, but that it now faced the problem of fair weather flying.

## Western Strike Ends

**Airline and pilots agree  
on proposal after 92 days**

Western Airlines began warming their engines last week, while Western Air Lines' ground and air crews turned to the task of putting an airline back into operation after over three months of strike-forced idleness. The 92-day strike against the airline ended a week-ago Saturday, when both company and Air Line Pilots Assn. representatives accepted an arbitration proposal submitted by Federal Mediator Leverett Edwards.

Under Edwards' proposal, the strike was called to a halt, and negotiation on the issues that led to the walkout were continued for a period of five days. At the end of this time, the differences still not ironed out were to be turned over to a negotiating board with both parties bound to comply with the board's findings. It seemed likely that ALPA would try and settle as much as possible during the five-day period—judging from the union's distrust in the past of the merits of this type of a settlement. First part of the five-day talks concerned back-to-work procedures.

Complete details were not available at presstime, but, it was learned that 12 issues remain to be solved. Wages are the major difficulty.

Previously, it was announced that an interim agreement took the "third pilot" issue out of the argument. This agreement called on the airline to notify the pilots 65 days prior to starting operations with Lockheed Turbo-prop Electra airliners.

The pilots have a five-day period in which they may reopen negotiations on this phase of the dispute only. The agreement also provides that the pilots will fly the Electra in any case—with final settlement to be made retroactive

to the date of the start of Electra operations.

Upon signing the agreement, Western immediately began recalling its 2,700 employees to work, but officials estimated there would be at least 10 days delay before regular service could be restored.

The carrier's fleet was dispersed at eight major centers on the WAL system. The aircraft had to be checked and flight tested, while the crews had to be recalled for refresher training before operations could resume.

## More Electras Sold

**Four Australasian lines  
order 11 new propjets**

Four Australasian airlines have placed orders for 11 Lockheed Electra propjets valued at \$27 million.

The new orders include: four for Qantas Empire Airways, of Australia; three for Tasman Empire Airways Ltd., of New Zealand; two for Trans-Australia Airlines; two for Ansett-Australian National Airways.

The purchases raise the Electra backlog to 151 planes—worth almost \$325 million.

Ansett-ANA originally asked import licenses covering four Electras but was turned down by the Australian government. It has now been approved for two and was told that in addition it may purchase as many Viscount 800s as it requires.

TAA had sought permission to buy two French Caravelles, but was refused and told it may buy the two Electras. Ansett-ANA and TAA are each expected to purchase at least four Viscount 800s.

TAA also has been granted permission to buy six additional Fokker F-27s; this brings its total Friendship order to 12.

Explaining the government's refusal to license purchase of both Electras and Caravelles, Senator Paltridge, Minister for Civil Aviation, said introduction of both planes to short-range Australian routes could only add substantially to the overall cost of national transport. The Viscount 800, he claimed, is "distinctly superior" to other types for short-haul routes.

If the airlines had bought radically different aircraft for medium-range work there would have been a competitive race for a multiplicity of jet types, he said, adding that this would have damaged the government's policy of retaining two major domestic airlines in active competition. Representatives of both airlines had now agreed on the Electra for medium-range work, he stated.

## Correction

In the April 21 issue, page 93, fuel consumption for United Air Lines' international operation showed 2,078,073 gallons. Correct total is 8,635,047 gallons. Cost was \$1,732,089.



## New York Airways Puts 44-Bs Into Service

Having taken delivery of three 15-passenger Vertol 44-B helicopters, New York Airways introduced the aircraft to scheduled service in the New York area last week. Last two of five 44-Bs the airline has on order are scheduled for delivery this month. The Vertol fleet will be equipped with Bendix-Decca navigation equipment under terms of an Airways Modernization Board contract providing for operational evaluation of the LF radio-navigation aid. In addition, the new helicopters are equipped with sonic altimeters by Bendix Pacific Div., first

commercial application of this accessory.

The carrier claims that it is the first scheduled airline to paint its aircraft with fluorescent paint. Day-Glo has been used to accentuate the line's name, the markings, rotor tips and strips on the top and bottom of the fuselage. Equipped with floats, the helicopter's fuselage is sealed to permit amphibious operations. Powered by a 1,425-hp Wright Cyclone, the Vertol 44-B carries a 2,800-lb payload at a cruising speed of 100 mph over a range of 75 miles with standard fuel reserve.



## 'No-Show' Doomed

**ATC votes to terminate  
\$3 penalty on August 12**

Although two parts of the domestic airlines' no-show control plan will remain in effect until Dec. 1, 1958, there is no assurance that any provisions of the program will survive beyond that date.

The Air Traffic Conference voted to discontinue the \$3 no-show penalty on Aug. 12 but to retain reconfirmation and minimum time limits on ticket pickup until Dec. 1. Opposition to the plan was led by American Airlines—original proponent of no-show controls—which nevertheless voted for the compromise Dec. 1 extension.

Mohawk Airlines would not vote for any part of the plan and will be exempt from all provisions on Aug. 12. Allegheny Airlines is exempt on its route out of Detroit and Erie, which is competitive with Mohawk.

Whether CAB will move to implement some kind of no-show controls remains to be seen. Immediately following the ATC meeting, William Morrisette, v.p.-traffic and sales, wrote to CAB, warning that the "dissidents" will, "unless prevented," refuse to extend the plan beyond Dec. 1. He cited detailed statistics to show that the plan has substantially reduced EAL's no-shows.

Meanwhile, American has prepared a plan of its own, which contains no penalty. This plan, AA says, would place the burden on the airline rather than on the customer for double-checking a passenger's intention to use his reservation. It would also modify ticket time limits to accommodate people living in outlying areas.

AA claims that the present plan was justified during a period of abnormally high load factors, but that its new program is designed to serve the public under more normal conditions. The AA plan would apply only to those flights which are heavily booked most of the time.

## Industry Best Authority On Fares Says CAB Member

Unless airlines' fare proposals are unjust or unreasonable, the Civil Aeronautics Board must not try to substitute its judgment for theirs, according to CAB Member Louis J. Hector.

Using a dissent in a U.S.-Alaska fare case to express important views on CAB's fare policies, Hector added that "there is a broad range of reasonableness within which the carriers should be permitted to operate on rate matters without interference by this Board."

Commenting on the belief of the U.S.-Alaskan carriers that higher fares

will bring revenues and costs closer into balance, he said: "On matters of this kind I have greater faith in the expertise of the carriers coping with the problems on the spot than in the expertise of governmental experts sitting in Washington . . .

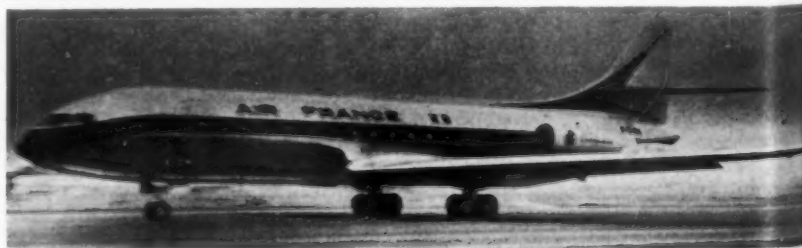
"Our statute does not provide that we shall set all rates for air transportation. We are given that power only in those cases where the rates which the carriers are charging or proposing are clearly unlawful. This is as it should be. Nothing in economic history, or the experience of regulated transportation industries, inspires much confidence in massive, detailed rate-fixing by governmental decree. When this happens, it means that true rate-making by the free play of economic forces has broken down.

"It is our job to keep the civil aviation industry within the bounds of public policy established by law and to encourage its development in so far as we are able. We are not obligated or empowered to run it . . .

"Unless we are to maintain that the air carriers have the burden of proving . . . the wisdom of every proposed change in their tariffs, we must let them set such fares as their own business judgment recommends, provided they are not unjust or unreasonable."

## First Jet-Packet Is Sold; Seven More Sales Expected

Steward-Davis, Inc. has announced the first sale of Jet-Packet 1600 aircraft has been negotiated with Ricardo de Varennes, president of RIVAEREO of Santiago, Chile. RIVAEREO will transport miscellaneous cargoes and fresh food between the high mining communities of northern Chile, the cattle basins of Argentina and the valleys of Chile with the two Jet-Packets it has ordered. Additional aircraft have been optioned and it is expected that eight Jet-Packets ultimately will be operated.



## First Production Caravelle Flies

First of 12 Sud Aviation Caravelle jet transports ordered by Air France is undergoing flight tests and soon will be joined by first of six on order by Scandinavian Airlines System. French company announces it plans to build 75

## —TRANSPORT BRIEFS—

Trans World Airlines became the first U.S. trunkline to hire a Negress as a flight stewardess.

Henry P. Julliard, manager of Standiford Field, Louisville, Ky., was elected president of the American Assn. of Airport Executives.

Slick Airways said it will withdraw from the Air Transport Assn. and the Air Traffic Conference. The all-cargo line suspended common carrier operations on Mar. 24 because of financial conditions.

Seaboard & Western Airlines asked CAB to approve an agreement under which it would buy a 25% interest in Aerlinite Eireann, Irish airline, for \$1.4 million. Aerlinite recently started U.S.-Ireland operations, using Super Connies leased from S&W and flown by Seaboard crews.

American Airlines expects to complete arrangements this year for acquisition of a number of medium-range jet transports. C. R. Smith told stockholders, AA reported January-April earnings of \$2,909,000 against \$2,991,000 in the same 1957 period. Fare increase granted by CAB in February should develop about \$16.5 million additional revenue annually for AA, but Smith said the increase is "insufficient in terms of the industry's present and future financial needs."

Capital Airlines is furloughing 200 to 300 employes out of a total of 8,100. Reasons: the recession; upcoming July-August slack period during which business firms along Capital's routes close down entirely for vacations.

The first of 40 Lockheed Electras ordered by Eastern Air Lines made its first flight at Burbank, Calif. EAL will receive its first plane in September, expects to have 12 in operation by the end of the year.

Claude King, Cleveland's airports commissioner, was elected president of the Airport Operators Council.



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## ALLISON PROP-JET POWER

# The Fare Probe Goes On... and on... and on

The government's General Passenger Fare Investigation "may turn out to be the very best capital investment we've ever made in ourselves," says United Air Lines President William A. Patterson. "It's going to be expensive and complete, and I think we should be prepared to adjudicate our requests for higher fares through the courts if necessary."

Here follows a report on the investigation to date, with a prediction as to its final outcome.

by Robert Burkhardt

Transport Editor

In ancient times one of the unanswerable questions concerned angels: how many can stand on the point of a pin? Today, in many serious gatherings an equally unanswerable question is often debated: what is a fair profit?

The General Passenger Fare Investigation is a case in point.

Announced with much fanfare more than two years ago, the investigation was originally billed as a long overdue probe of the airline industry. "An investigation... hereby is instituted to determine whether the fares and charges... are generally unjust or unreasonable," the Civil Aeronautics Board's opening Order of Investigation declared.

On the question of airline profits, the CAB said ominously that "in every year since 1950 the domestic trunkline industry has earned a return in excess of 10%, the returns ranging from a high of 14.6% in 1951 to a low of 10.4% in 1954."

Are these fair profits? Or, alternatively, in the words of the CAB, was the public "being subjected to excessive charges" in those years?

This question, raised by the CAB in its original 1956 opinion and order, has been blunted by the current recession in traffic and earnings. Even so, better times in the future are assumed, and many of the searching questions put by CAB Bureau Counsel have been

based on the premise that a return in excess of 10% is in fact excessive. Therefore it must follow that passenger fares have been to high.

**\* There are other tough questions—** Three other almost impossible-to-answer questions are also at issue in the investigation:

What is a proper load factor for commercial airline operations?

Should airline fares be judged in relation to "rate of return" on capital investment, or "margin of profit" on operations?

What general regulatory principles should apply in the airline industry?

Since these are all questions of the most complex economic sort, many of the witnesses' answers are couched in the most complex economic terms. Sample:

"If revenue regulation of a certain industry is not required by the public interest, but regulatory authority nevertheless determines the place ceiling on the rate level, the margin-of-return method is likely to prove more effective and do less mischief than the rate-of-return method and this particularly so when industry or area-wide regulation only is feasible."

Well, after six months of this sort of thing it is also possible to understand why a four-week recess has been ordered. Not all the testimony is quite this bad, of course. But some of it is even worse; on more than one occasion

Examiner Ralph Wiser has had to explain to the witness what he was talking about. It is a common occurrence for the investigation to "go off the record" in an effort to untangle a complex semantic snarl.

**\* Cross-examinations lead to befuddlement—**One of the most irritating aspects of the investigation has been the kind of cross-examination that repeatedly leads the witness down devious and dimly lit paths. Seemingly this is done with the idea of either abandoning him in an economic maze or of demonstrating for the record that the witness is incompetent, lacking in material and unable to stay relevant. This kind of questioning seldom develops any useful new information. Increasingly in recent weeks it has drawn critical comment from the hearing examiner as well as heated objections from witnesses' counsel.

Few of the executives and experts offered up by the industry for cross-examination have escaped this kind of questioning. It was originally expected that the hearing phase would take only three months, but the long and tedious questions posed by Bureau Counsel have been a main factor in the dragging pace of the hearings.

In addition to delaying the investigation, Bureau Counsel has also managed to obscure many of the carefully prepared arguments of the carriers on the key issues in the case.

Why such an obstructionist approach to the most important airline operations study in the history of the industry? A clue may be found in the trial brief of Bureau Counsel, submitted to the examiner at the beginning of the hearings:

"It is Bureau Counsel's position at this time that the Board should not per-

## Will the CAB Grant Another Airline Fare Increase?

### If So, When? And How Much?

AMERICAN AVIATION's transport editor is willing to stick his neck out and make a prediction.

**His guess:** There will be a fare increase, amounting to 7% on domestic fares. The vote will be 4 to 1. Dissenter will be Member G. Joseph Minetti. Member Louis Hector will issue a separate concurring decision.

**When?** Our bold transport editor thinks CAB will vote and issue a press release decision in February, 1959, with a final opinion and order in May. This will be three years after the start of the passenger fare in-

vestigation. One interim fare increase has been granted since the case started; an additional selective increase will be granted.

**Further prediction:** That Examiner Ralph Wiser's initial decision will be in favor of the "rate of return" regulatory base and this will be upset by the Board. But the Board will adopt his recommendations on general regulatory principles as well as his conclusion that there is no "proper load factor" standard that can equitably be used.



mit a change in the general level of passenger fares for the domestic trunk-line industry. We believe that the profit element should be measured by a return on investment. We recommend a return of 8.9% of the Big Four carriers and 9.5% for the remaining trunk-line carriers."

These arguments are opposed by every one of the 12 carriers who have appeared in the investigation. In addition to the testimony of the airline presidents, vice presidents and sundry other company officials, noted economists and financial analysts have taken the stand to refute the position of Bureau Counsel.

• **Smith is lead-off witness**—C. R. Smith, president of American and a frequent contributor on aviation affairs to national magazines such as *Fortune* and the *Saturday Evening Post*, is one of the airlines' most articulate spokesmen. He was lead-off witness for the industry and his opening remarks struck directly at the contentions of Bureau Counsel:

"American Airlines needs a rate of return on its invested capital, after taxes, of approximately 12% . . . to this end our fares should be increased by 15%."

He hammered home his argument with detailed estimates of American's cost in the leap from piston-powered aircraft to jets. "The 15 additional long-range jets and the 25 intermediate-range jets which we are now about to order, with the related ground equipment which we ourselves will have to buy directly, will require us to spend an additional \$200 million between now and late 1961."

Yet the total net worth of American at the end of last year was only \$130 million and its net earnings in 1957 totalled little more than \$10 million, including profits made on the sale of aircraft. Several of the other trunklines did not fare as well.

"Probably never before in our country's business history has there been an industry which has required such a huge relative capital expansion in such a short period of time as is true of the airline industry today," Mr. Smith testified.

"One central fact stands out: the industry's earnings are going down at present fare levels. Yet there never was a time when it was so necessary that earnings be increased to an adequate level."

These are blunt words, and many of the airline witnesses who followed Mr. Smith took the same direct approach to the fare question. This has not been to

the liking of Bureau Counsel, who would prefer a theoretical discussion of aircraft replacement; one which would avoid any market-place talk about the cost of stepping up to the new jets and where the money is coming from to pay for them.

• **Need for jet equipment ignored**—In the 12-page trial brief submitted by Bureau Counsel at the start of the hearing, for example, there is not a single mention of the jet equipment problem. Instead there is only an oblique reference to the need of the carriers "to develop and maintain a fleet which will keep pace with and foster the movement of traffic."

Witnesses for the CAB's Bureau of Air Operations take the same casual and somewhat obscure approach to future financing needs. For example, Prof. Paul Howell, a financial consultant, testifies for the Bureau that the money put aside for new equipment purchases could be used, if need be, to pay interest charges on bank loans. Ignored is the chilling fact that, if this were common practice, airlines would not only be unable to buy new jets, they would never have been able to replace their old DC-3s with four-engine equipment.

While each individual airline testified to its own problems in stepping up to the jet challenge, the Air Transport Assn. presented the case for the industry as a whole. "The domestic lines have committed themselves to buy—and have already begun to pay for—some 357 jet and turboprop aircraft which will revolutionize both the speed and quality of travel . . . first stage of this jet program will require, by the end of 1961, that the domestic airlines more than triple their investment in flight equipment."

"These financial requirements are, by any realistic terms, staggering. They can be met—particularly with respect to the needed additional purchases of jets—only as airline securities become more acceptable to investors than is now the case. This means substantially better earnings, and more regular dividends, than the airlines have hitherto found possible at the fare levels permitted by the Board—fares which today, after almost two decades of inflation, average out at less per passenger mile than in 1938."

At the present time, the carriers have completed their presentations and the investigation is in the midst of a four-week recess. At the end of the recess the government will present its witnesses for cross-examination by the carriers and the ATA.

Following this, Examiner Wiser, who has patiently sat through every single one of the more than 100 days of hearings, will compose his mind, attempt to digest the indigestible, and write an initial decision on the various issues raised, including the issue most immediately pertinent: should airline fares be raised?

Finally, after a further and impressive delay, the Board itself will rule. Finis. Finis? Well, not quite. For, as CAB Chairman James A. Durfee revealed casually in the agency's appropriations hearings on Capitol Hill a few weeks ago: "We propose to determine in the general passenger fare investigation basically the question of rate of return. Following that it will be necessary for us to go into another case of equal size; namely, the general fare structure of these carriers."

*Translation: As soon as we have finished examining the angels we plan to begin an investigation of the pin.*

## Flying Tigers Joins Ranks Of Subsidy Seekers

The Flying Tiger Line has become the fourth certificated cargo carrier to ask CAB for subsidy. Already on file were subsidy applications from Riddle Airlines, Slick Airways and AAIXCO.

Although FTL said it was not faced with an immediate financial crisis as were the others, it added that the trend of events indicated the possibility of dire straits by the time CAB could take any action on its application.

"As long as the all-cargo carrier remains a second-class citizen without call upon the Board for relief, it can anticipate no effective or affirmative support from the Board against the encroachment upon private enterprise by the military," FTL said.

## Hawaiian Airlines Seeks Return to Subsidy Status

Hawaiian Airlines, which has operated without subsidy for over a year, has asked CAB to return it to a subsidy rate temporarily.

HAL cited adverse effects resulting from Hawaii's current sugar strike and also said that a drop in traffic "has been magnified by the reversal of the growth trend in tourist travel between the islands beginning with the first quarter of 1958."

Subsidy was requested only for a period ending 12 months after the end of the sugar strike. CAB recently returned Trans Pacific Airlines, of Hawaii, to subsidy for the same period.



## Not Enough Pilots

European lines feel pinch,  
forced to cut schedules

by Anthony Vandyk  
International Editor

GENEVA—Pilot shortage is causing several European airlines to operate fewer schedules than they would like this summer. Perhaps for the first time since the war there is sufficient equipment on hand to carry out the programs decided by the airlines' planning departments. But the lack of pilots means that the aircraft cannot be utilized as fully as the programs require.

Swissair is a typical example of the European airline that suffers seriously from a shortage of pilots, notwithstanding the fact that 25% of its 295 pilots are foreigners. This number of 295 is in itself significant. It compares with 164 in 1954 and 68 in 1950. There can be few carriers outside Europe that have had to increase their number of pilots fourfold in the last eight years.

Until 1955 Swissair did not get along too badly. It recruited almost all its pilots from the Swiss Army. However, at the same time that Swissair was expanding, the air arm of the Swiss Army was contracting. In 1950 Swissair's pilots amounted to only 14% of the total number of pilots in the Swiss Army. The percentage rose to 34% in 1954 and is now at about 62%.

Thus in 1955 Swissair was compelled to start training its own pilots from the start. This meant doubling training expenditures for it costs the airline about \$9,500 to train pilots who were previously military pilots as against \$19,000 for those without military flying experience.

The problem of finding suitable candidates for training as pilots has been a very serious one for Swissair. For example, in the last two years the company sifted applications from 5,000 candidates and decided that 500 might be suitable. These 500 were asked to undergo tests. In the end the number of potential pilots was whittled down to 43 in 1955 and to 20 in 1956. Of the 43, 30 succeeded in passing their training course while in 1956 all but two of the 20 were successful.

Swissair has established the fact that the greatest percentage of successful candidates come from those who have had technical and mathematical training. Consequently today Swissair confines its pilot recruiting campaigns to Swiss technical institutes and engineering schools.

## New Route Awards Made— But It's 'Use or Lose'

Extensive new route awards to three local service carriers have been made by the Civil Aeronautics Board, but, in a new policy statement, the Board warned newly-certificated communities that they must use the service or lose it.

In a press release decision, CAB announced awards to Frontier, North Central and Ozark. The decision covered the Seven States Case, first of nine regional proceedings.

Many of the route awards are for a temporary five-year period.

Under the new "use it or lose it" policy, CAB will, in the absence of "unusual or compelling circumstances," start formal proceedings to determine whether to suspend or delete service at a specific point if

operations through the seventh to 18th months at such point showed an average of less than five enplaned passengers daily.

CAB will take similar action regarding a total route segment if passenger loads on each flight over such segment average less than five during the same test period.

If a segment averages between five and seven passengers per flight during this period, steps toward termination of the service would also be taken "except where unusual circumstances such as extreme isolation or national defense needs dictated the contrary."

CAB said it anticipates "a considerable increase in the initial subsidy requirements of the airlines involved" in the decision.

### Route Awards

#### Frontier Airlines

Denver-Rapid City  
Denver, Cheyenne, Scottsbluff, Alliance, Chadron, Hot Springs and Rapid City. (Permanent)

Casper-Bismarck  
Casper, Newcastle, Rapid City, Lemmon, Dickinson and Bismarck. (Temporary)

Williston-Bismarck  
Williston-Minot-Bismarck, with present segment between Williston and Dickinson eliminated. (Temporary)

Southern Nebraska Route  
Denver, Sterling, Sidney, (a) beyond Sidney to terminal point North Platte; (b) beyond Sidney to Omaha via Imperial, McCook, Kearney, Hastings and Lincoln. (Temporary)

Central Nebraska Route  
Denver, Cheyenne, Scottsbluff, Alliance, North Platte, Grand Island, Lincoln and Omaha. (Permanent)

Northern Nebraska Route  
Casper, Douglas, Lusk, Chadron, Valentine, Ainsworth, Norfolk, Columbus, Lincoln and Omaha. (Temporary)

Omaha-Kansas City  
Omaha-Lincoln-Beatrice-St. Joseph-Kansas City. (Permanent)

#### Ozark Air Lines

Des Moines-Milwaukee  
Des Moines-Cedar Rapids-Dubuque-Madison-Milwaukee. (Temporary)

Quad Cities-Twin Cities  
Quad Cities-Cedar Rapids-Waterloo-Rochester-Twin Cities. (Permanent)

Des Moines-Twin Cities  
Des Moines-Fort Dodge-Mason City-Austin/-Albert Lea-Rochester-Twin Cities. (Permanent)

Sioux City-Chicago  
Sioux City-Des Moines-Ottumwa-Burlington-Peoria-Chicago. (Permanent)

Chicago-Sioux City/Omaha  
Chicago - Rockford - Dubuque - Waterloo - Fort Dodge and beyond (1) to Sioux City and (2) to Omaha. (Permanent)

Des Moines-Chicago  
Des Moines-Iowa City-Clinton-Chicago. (Temporary)

Kansas City-Quad Cities  
Kansas City-St. Joseph-Kirksville-Burlington-Quad Cities. (Temporary)

Amend segment 5 (Kansas City-Chicago

route) by adding Moberly, Mo., as an intermediate point between Columbia, Mo., and Quincy, Ill. (Temporary)

Between the terminal point St. Louis and the terminal point Quincy, Ill.-Hannibal, Mo. (Temporary)

Omaha-Sioux Falls  
Omaha - Norfolk - Sioux City - Yankton - Sioux Falls. (Permanent)

Sioux Falls-Waterloo

Sioux Falls-Spencer-Estherville-Mason City-Waterloo. (Temporary)

#### North Central Airlines

Minot-Sioux Falls  
Minot - Bismarck - Aberdeen - Huron - Mitchell-Sioux Falls. (Permanent)

Grand Forks-Minot  
Extension of segment 8 from Grand Forks to Minot via Devils Lake. (Temporary)

Rapid City-Twin Cities  
Rapid City-Spearfish-Pierre-Mobridge-Aberdeen-Watertown-Twin Cities. (Temporary)

Sioux Falls-Twin Cities  
Sioux Falls-Worthington-Fairmont-Mankato-Twin Cities. (Permanent)

Sioux Falls-Twin Cities  
Sioux Falls-Mitchell-Huron-Watertown-Twin Cities. (Permanent)

Grand Forks-Sioux Falls  
Grand Forks-Fargo-Watertown-Brookings-Sioux Falls. (Temporary)

Madison-Rockford-Chicago  
(Temporary)

Twin Cities-Milwaukee  
Twin Cities-Eau Claire-Marshfield-Appleton-Milwaukee. (Permanent)

Ashland to be added as an intermediate point between Ironwood and Duluth. (Temporary)

### Suspensions

#### Braniff Airways

Minot, Bismarck, Aberdeen, Watertown, Huron, Fort Dodge, Mason City, Moline, Burlington, Ottumwa, Quincy, St. Joseph, Lincoln and between Sioux City and Des Moines on segment 48.

#### Western Air Lines

Rochester, Mankato, Brookings, Spearfish, Hot Springs, Chadron, Alliance and Scottsbluff.

#### United Air Lines

Scottsbluff, North Platte, Grand Island and Iowa City.

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## SAM SAINT SAYS

### We're Still Waiting for a Practical Look At VOLSCAN-Type Computers for ATC

More than a year ago this column suggested trying the military VOLSCAN approach interval computer at Chicago. Shortly thereafter CAA and the military ran a "quickie" eight-day test at Deer Island, Mass. This test seemed to show that the suggested trial use of VOLSCAN in a live civil environment (such as Chicago) was ill-advised and premature.

This column predicted that a VOLSCAN-type computer (the Navy has one too) could land 15 more aircraft per hour than now land in clear daylight, 25 more in moonlight and 22 per hour more in full IFR weather. This estimate was the result of comparing existing approach performance with the results of VOLSCAN tests to that date. The CAA test at Deer Island made no such comparison.

It would seem logical to find out how much runway time is wasted by allowing pilots to position themselves on approach in clear weather—how much runway time is lost by inaccuracies in present vectoring by radar controllers. This would give some idea of the improvement to be expected by applying electronic computing techniques to the vectoring of flights into the final approach time slot. As of now there is no documented answer. We still do not know the potential advantage of applying VOLSCAN techniques to the civil operation.

The potential is important. Approach interval control is the spigot at the end of the ATC pipe. Opening this spigot wider takes the pressure off every other part of the system. And a minute saved on one approach cuts a minute from the delay of every flying machine waiting in the queue plus all those added to the queue so long as any queue remains.

In the Deer Island experiment CAA turned up the questions—but not the answers. For example, they "discovered" that the VOLSCAN computer did not keep flights safely separated. But they did not uncover the simple answer: Separation is better left as it is now—discreet altitude steps until radar separation is established.

At Deer Island the CAA found it awkward for controllers to send

signals to a "talker" who in turn told the pilot what to do. True, this is unrealistic and unworkable. Pilots and controllers alike will insist on eliminating the middle man.

The CAA found that the military version of the VOLSCAN computer calls for too many and too frequent heading changes to stretch or shorten the final flight-path to the runway. This congests communications channels, overloads controllers and annoys pilots. But again no consideration was given to a simple, civil modification of the computer. In the civil application no more heading changes would be required than are presently used in manual radar approach procedures.

The Deer Island test (using the too frequent and too small heading changes required in the military application) made it appear that VOLSCAN could not be applied in the airspace presently allotted to radar approach control systems—VOLSCAN airspace requirements could not be fitted into present congested areas. Again no one pointed out that the computer could be tailored to fit present approach patterns. There is no mathematical reason why more airspace is needed than we are already using to get full use of the runway.

There is a general impression that new procedures would be required to apply VOLSCAN to the civil operation. Actually computed heading changes could replace headings chosen by visual inspection of a radar with no change in operating procedures, no increase in communications and no increase in controller work load.

The CAA test at Deer Island was hampered by radar jamming from an Army test unhappily and unexpectedly scheduled for the same period. It was true that automatic tracking circuits could not always hold targets during the CAA evaluation, but neither would manual radar control have been acceptable.

An approach interval computer is not a top priority item at present—communications and controller coordination and display problems will limit traffic flow—but such a computer will ultimately be an essential part of the Common ATC system.

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## EN ROUTE

by Wayne W. Parrish

### The Royal Treatment in New Zealand

#### —Without the Velvet

First on the day's business at Wellington, the capital of New Zealand, was a coffee visit with the staff of the National Airways Corp. in the offices of J. J. Busch, general manager.

I found the NZNAC people eager for news about airlines and equipment in the U.S. and other parts of the world, and it was good to know that this magazine gets regular readership among the staff.

NZNAC is a good operation. It has 22 DC-3s plus 3 C-47s in freight service. Three Viscount 800s are on order and this is a big move because of limited airport facilities in the small country.

NZNAC has been a conservative operation, undoubtedly lagging behind in some respects because it is a government-owned monopoly. On the other hand, the limited population of two million in a small country, plus good rail and road services, could scarcely warrant any real airline competition. The state exercises strong control over all transport and utilities.

**• No smoking allowed**—The airline is possibly the only one in the world on which smoking is not permitted. The ash trays are in place, but the sign remains lighted at all times. The official reason is that smoking may bother some passengers and it makes for an additional plane maintenance chore and most of the hops are short. But smoking will probably be permitted on the Viscounts.

NZNAC uses no stewardesses or cabin help. The co-pilot takes a run or two back into the cabin and that's all. There is no food or beverage service. But stewardesses will be used on the Viscount runs and I have a hunch they'll be used on the DC-3s in due course.

Believe it or not, but up until a few years ago NZNAC never operated on Sundays and even now the Sunday schedules are limited. Public pressure finally overcame the management's earlier conviction that nobody wanted to fly, or would fly, on Sunday. Much to the airline's surprise, Sunday business has been very good—and is increasing.

There is little flying after dark; the last arrival at any airport is 9:20 p.m.

As might be expected from a state monopoly, load factors are kept high by tight scheduling, or actual underscheduling. You have to book your ticket pretty far in advance on some flights. If you cancel out, you get a full refund on your ticket only if you cancel 72 hours in advance of flight time. You are charged a 25% penalty on the refund if you cancel between 72 hours and 15 minutes before departure. If you're a no-show, no refund at all; unless, of

course, your failure to show was caused by breakdown of ground transport or other reasons beyond control.

**• It's a smooth operation**—But if NZNAC lacks a certain flexibility and makes its customers toe the line, it is a smooth and on-time operation. I flew more than 1,500 miles on the airline and have only high praise for everything except the type of passenger service which Australia, the U.S. and Europe give to woo customers; which is nice to have but certainly not essential. And the no-smoking rule, I should add, which I must confess I broke on several long hops without being tossed out of the plane. (The co-pilot didn't come back to the cabin and I was in the last seat; nobody complained).

After my NZNAC staff visit, I was picked up by Tom O'Connell, founder and general manager of SAFE, Straits Air Freight Express, and it is my sad duty to report that this energetic pioneer of air freight was killed in one of his company's Bristol airfreighters some months after my visit down there last year.

O'Connell was one of those blokes you took an immediate liking to. He was a zealot. He had a fervent belief in the ability of the airplane to haul quantities of freight and had made a contract with the national railway to fly the railway freight between the two main islands of New Zealand, basically an air ferry service from one railhead to the other. For this service he developed the Cargon system, movable floors interchangeable as between railway car, truck, and the Bristol airfreighter. I wrote extensively about this system a year ago.

So Tom O'Connell took me to the railhead on the north island and I saw the whole procedure of moving freight from railway cars to trucks to airplane, and then I flew in a loaded Bristol to the south island and watched the procedures there. On the way over the crew gave me a super view of one of the beautiful fjords for which the south island is noted.

Flying back to the north island, the Bristol carried a railway car as half of its load. It was the first time I've ever flown with such cargo, but one of SAFE's regular jobs is transferring railway cars from one island to the other.

The day wasn't over by any means. I got on a NZNAC DC-3 at 5:40 p.m. and flew again to the south island but this time down about midway to the town of Christchurch on the east coast (population about 125,000) and landed

at Harewood Airport, which is the airport used by the U.S. as takeoff point for the Antarctic.

I had been in Christchurch for a few hours back in 1944 and had remembered it as a lovely quiet English-type town. The Avon River flows through it and there are many park areas. My memory had served me correctly. One could say that Christchurch is excruciatingly dull and conservative. Or you can say that it is one of the loveliest towns to be found anywhere. Depends on what you're looking for.

With me on the flight to Christchurch was I. H. Driscoll, branch manager for NZNAC at Dunedin, the next town south. He was staying overnight at Christchurch. We were met by J. E. Davies, the local manager, who drove us to town to the Clarendon Hotel and a late dinner after closing hours. (By special arrangement the hotel feeds arrivals on the last evening flight).

**• Treated like royalty, almost**—The Clarendon is along the Avon River and I was given Room #10. As the bellhop took my bags up, he let me know that I really rated—seems that Room #10 was the one occupied by Queen Elizabeth and Philip when they paid a royal visit to Christchurch.

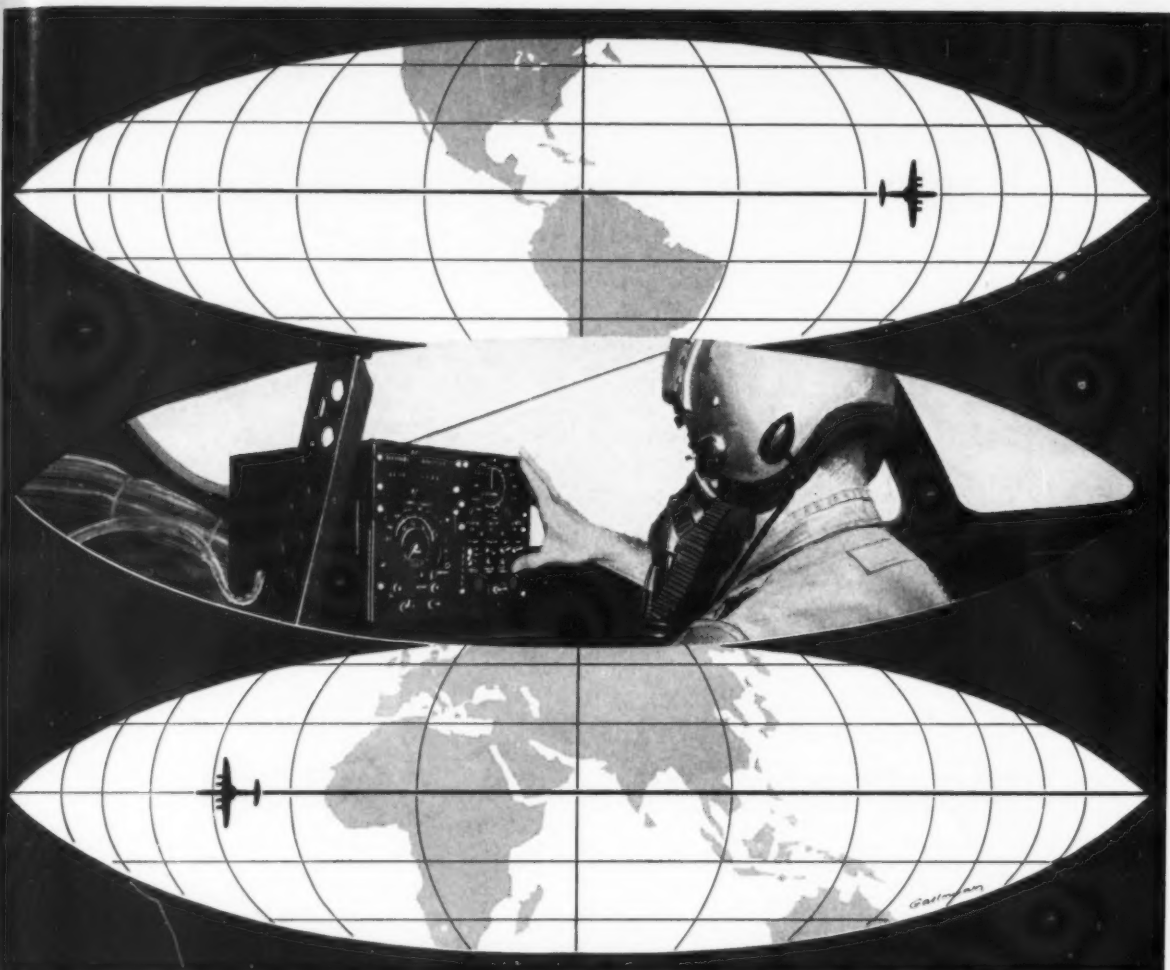
Well, you know me, a guy out of the midwest of the U.S.A., quick as a flash something came to my corn-country mind, and I opened my trap to say, "Oh, . . . uhhmmmm . . . so I'll be sitting on the same . . . ."

Before I could finish the sentence, the bellhop, who also had a corn-country mind, broke in and said "No, they took the velvet seat cover off as soon as they left."

No doubt my U.K. readers will think me highly disrespectful for mentioning this, but really now, I thought it was quite educational to learn that Christchurch had laid on a velvet seat cover on the W.C. for the royal visit, and while I couldn't rate such a plush amenity, if that's the right word, at least the basic facilities were the same.

I assume the furniture had been switched, too, but anyway it was the same room, the best room in the hotel (possibly the only room in the place with private bathroom because those things are rarities in New Zealand), and the windows looked out upon a quiet street and the placid Avon River just beyond that, and then a park. The Queen and I looked out the same windows and washed our faces in the same basin, a few years apart, and that's about as close as I'll ever get to royalty.





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